

## **Orthodontia.—Its Outlook.\***

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*Read before the American Society of Orthodontists at St. Louis, Mo., June 11, 1901.*

This morning marks another epoch in the history of science, the opening of the first meeting of the Society of Orthodontists, a society organized for the promotion and exaltation of that branch of dental science known as orthodontia, and looking to the early and complete recognition of this branch as a distinct specialty, to be taught and practiced as such.

Doubtless it would not be inappropriate for me at this time to set forth the reasons for the organization of such a society, for unless there be good and valid reasons for its establishment, its course must be marked by an unhealthy and unprofitable existence and probably an early dissolution. On the other hand, if there be good and sufficient reasons for such a society, they should be known and recognized by the lovers of all branches of medical science and the sympathy and assistance of all enlisted, that the greatest degree of benefit may be conferred, not only to the science of orthodontia, but to humanity at large, to whose welfare all laws enacted and all societies organized owe their first duties. Hence, I shall endeavor to set forth some reasons why this organization should be

\*President's Address.

founded and why I believe this meeting marks the beginning of something so grand, so noble, something destined to so elevate dentistry in general and so greatly benefit humanity that even we who are assembled here this morning do not yet dream of its full importance, though we, as founders, are most interested and our hearts beat highest in enthusiasm, anxiety and love for this branch of science and the success of this, the first meeting.

To intelligently understand the reasons for the organization of this society we must trace something of the history of orthodontia.

**History of  
Orthodontia.**

What are the conditions in which we find orthodontia and what are its relations to dentistry and science in general and humanity at large, at this time?

You all know that it has been closely allied with the history of dentistry proper and that the two have been apparently closely interwoven in their unfoldings and evolution and that they have come down the centuries hand in hand together, and together have witnessed the marvelous changes and progress which science in all its branches has made.

The history of orthodontia is most interesting as well as instructive, and all who make pretensions beyond the merest smattering should be familiar with it. It will not be profitable at this time to closely follow its history, but only such phases of that history as seem to have a direct bearing on the object and importance of the formation of this society.

Of the genesis of orthodontia we know as yet nothing, but it is probably many centuries old, for malocclusion of the teeth, though undoubtedly becoming more and more prevalent, has apparently always been one of man's afflictions, and supply and demand have always had at least a theoretical relation.

From what is now known of the history of man during his evolution it is clear that he had, at various periods in the distant past, made great progress in both the arts and sciences, and it is probable that dentistry also had attained quite a degree of excellence. And indeed this is more than a theory, for the cemeteries of ages long past have revealed to us many clever specimens of bridges, crowns and other artificial substitutes for the human teeth.

What progress the ancients made in treatment for the relief of pathological conditions of the teeth, or of their malocclusion, we do not know, nor is this surprising, for the very evidence of such treatment would be perishable. Indeed, even in our own time the evidence of efforts having been made at tooth-straightening, even after the lapse of but a few months, is, as you know, sometimes difficult to detect. It is more than probable, however, that efforts towards the prevention of malocclusion in the way

of extraction must have been common quite early, for extraction to relieve crowded teeth which are erupting, would have been quite naturally the first thing to suggest itself, as it does now to the laity, and though rarely wise is, alas, far too often resorted to, even at the present time, by those whose duty it is to care for the teeth and who should resort to less harmful, far wiser and more effectual and scientific plans of treatment.

**Lack of  
Knowledge of  
Orthodontia.**

The written history of orthodontia, though comparatively modern, always fascinating to the real student of orthodontia, must, it would seem, have many surprises in store for him who at this date reads it for the first time, and yet these surprises are clues to a better understanding of its present condition and relation to the general practice of dentistry, and especially of its requirements, if progress and the greatest good for orthodontia is desirable. Notwithstanding the fact that dental science has made marvelous progress both in its teaching and in its practice, we are nevertheless compelled to say that the most of the teaching and the most of the practice of orthodontia has so far amounted to little more than the merest smattering. While the demand for general operations in dentistry is supplied with as high an average of skill, perhaps, as any of the branches of the arts or sciences, the same cannot be said of orthodontia, for notwithstanding the fact that malocclusion, with all its baneful effects, has grown to be almost the rule instead of the exception, only the merest fraction of those needing attention are receiving it, and even such treatment as is meted out is of such a nature as to leave but little doubt in the mind of the careful investigator that more blunders are committed than successes gained, and that in a heavy percentage of cases more injury has been done to the dental apparatus as a whole than benefit conferred, to say nothing of the frequently severe tax unnecessarily inflicted upon the entire physical economy of the patient.

Notwithstanding the fact that dentistry proper and orthodontia have been apparently so intimately blended and that able and competent, even brilliant operators are to be found in nearly every city and town in the civilized world, yet the number who could pass an intelligent examination in orthodontia, or who could scientifically diagnose and meet the requirements in treatment of any but an average case and that too, quickly, easily, without unnecessary pain or protractions, is remarkably limited. In fact they might easily be counted on the fingers of one hand. The harvest indeed is plentiful, but the laborers are few. Many confess that they know nothing about it and refuse, after a few futile attempts, to have anything further to do with its practice. And strange as it may at first seem, this will be found to be especially true of many of those who rank high in knowledge and skill in operative dentistry. Another surprising phase of the

history of orthodontia is that the great mass of the literature on the subject is devoted to the description of regulating appliances, principally of those that have been devised to meet the requirements of special cases, until many thousand appliances are recorded—some of them marvels of ingenuity and skill, others absurdly complex, most unsightly, crude, and inconvenient in the extreme, as inefficient and faulty in principle as it is possible to imagine, and made to operate in direct violation to many of the true physiological requirements of tooth movement and hygienic conditions incident thereto. They are produced in ignorance and operated in ignorance and the results are familiar to you all; yet our current literature still teems with them.

In fact, so prominent are the mechanics of orthodontia in our written history that our would-be student must often reach the conclusion that "regulating appliances" and "orthodontia" are nearly synonymous in their meaning. Imagine his surprise, if he could be convinced, as I feel sure that he can, that two or, at most, three appliances of proper form are not only ample to meet the requirements of all tooth movements, but do so more easily and acceptably than any or all the rest, and that these are founded on principles extremely simple and much older than this republic, and that at most appliances should be only a minor phase of orthodontia—merely a means to an end, as the colors and brushes are to the artist and he will be amazed to learn that many phases of orthodontia, which possess an even greater importance than the mechanical are usually lost sight of entirely and are, at best, only superficially considered, as for example, the very tissue changes incident to tooth movement and their wonderful modification and development subsequent thereto and the important bearing of all this on diagnosis and prognosis.

And again, if our student of the history of orthodontia be familiar with the true requirements and great possibilities of that science, he will be amazed at the wonderful lack of breadth of knowledge that has been displayed in the efforts made for the correction of malocclusion, these efforts being nearly always limited to the attempted correction of malposed incisors and usually of the upper arch only—mere symptoms of the true condition—and often accompanied by that most pernicious practice, extraction. Think of it! Working in utter disregard of the very basis of the science—*occlusion*, and in ignorance of its mighty laws! Think of it, you who now know the wonderful interdependence of the jaws and the importance of the humblest tooth, not only in its individual arch, but in its relation to all other teeth in both arches, and indeed to the entire dental apparatus and very structure of the face! Although the teaching of this branch in our dental colleges has made considerable advancement, our student would, nevertheless, be further shocked to learn of the crude, un-

scientific methods comprising the course in many schools of dentistry. I do not believe there is another branch throughout the whole realm of science so badly taught as that of orthodontia, its teaching in many schools being truly a disgrace to the science and to pedagogy.

Then why is it that so little really good work is done in orthodontia in proportion to the opportunities and importance? Why is orthodontia in practice but a side issue to all other operations in dentistry? Why is instruction in this branch in our colleges so lamentably defective? Why are the discussions of papers on the subject in dental societies so lamentably weak, being usually confined to the discussion of peculiar forms of regulating appliances, or tedious descriptions of so-called *rare* cases, or controversies over extraction as a means of treatment, while the very principles and most important phases of the subject are rarely ever even touched upon? Why is there such a lamentable number of failures and blunders in cases treated by dentists? Why are parents so often given such erroneous advice in answer to inquiries concerning developing cases of malocclusion in their children, as, "The children are too young," or, "too old," or "let them alone and nature unaided will perform the desired cure," or "wait until all the teeth have erupted before beginning treatment," or other discouraging answers, such as prohibitory fees, etc. The situation is remarkable and unique, a great and useful science struggling for recognition, yet receiving only snubs and discouragement at the hands of most practitioners. Again I ask, why is all this true?

**Orthodontia  
as a  
Separate Science.**

The answer to all these questions seems to me to be plain and should, as we think, be apparent to all, even to casual investigators. It is that orthodontia is a great science by itself, with requirements in its study and practice so radically unlike that of other branches of dentistry that the two can never be profitably combined, either in study or practice. Each seriously handicaps the other and orthodontia naturally suffers most for the reason that it is wholly unlike other operations in dentistry. It is therefore least understood, least studied and made secondary alike in dental colleges, in practice and in dental societies. Hence it is not unlikely to follow that in proportion as a dentist is successful in other operations of dentistry he will naturally be less successful in those of orthodontia, for in that same proportion he will have less inclination, less time, and less energy to devote to it. Few would think it advisable to combine the practice of rhinology with that of dentistry, and yet we believe the two could be far more easily, profitably and successfully combined than can orthodontia and dentistry proper. The fact is, orthodontia deals almost wholly with different tissues, principles and art problems from those treated in ordinary dentistry and is extremely ex-

acting in its requirements, necessitating peculiar talent, energy, fitness and devotion to certain lines of study which are as unlike those of other branches of dentistry as are the instruments best adapted to the performance of operations in each.

Another most important reason is that the science of dentistry has grown to such proportions as to embrace in its study so large a field that any one who attempts to master it all must be regarded as a mere smatterer. In fact it needs no argument to prove that all progress in the different branches of dentistry is in reality being made largely by those who are specializing.

The ultimate separation of orthodontia from dentistry proper is natural and inevitable and the sooner it is encouraged and becomes firmly established, the better it will be for both and infinitely better for humanity at large. Orthodontia offers ample opportunities for the brightest minds. Let each student of dentistry, after having acquired a thorough knowledge of the fundamental principles of the science, select such lines as are best suited to his aptitude and liking and confine his energies to his selection and the result cannot fail to be vastly more beneficial than the plan now followed. As yet there have been only a few who have had the courage to completely specialize the practice of orthodontia, but the result of the efforts of even those few has been truly remarkable. Orthodontia has been revolutionized, and we would ask those who may doubt the practicability of this specialization of orthodontia to but reflect on the marvelous advancement which has been made in the various branches of medicine through specialization, not to mention the growth of nearly every other branch of science and art accomplished by the same power. Indeed this is the very age of specialization, and was there ever such an age of progress? Wise is he who recognizes the natural and resistless power of specialization, and narrow indeed must be he who is blind to its demands and attempts to resist its might.

To hope that all this may be brought about at once, or even in several years, would be expecting too much. Great and radical changes must be wrought slowly. We must remember that each specialty in medicine has developed slowly and has become firmly established only after a considerable lapse of time and after many trials—ofttimes in spite of the keenest opposition—yet we can point with pride to the career of the late Dr. Thomas Rumbold of this city, whom several of us were proud to have the honor of calling friend. He was the father of rhinology and lived to see it firmly established as an indispensable specialty in medicine.

So we must work patiently and wait and believe that orthodontia, so replete with possibilities for improving the health and the happiness of orally deformed humanity, and for uplifting the highest phase of art, or

that of improving the lines of beauty and that too not applied to the cold, unresponsive lines of marble, clay, or on canvas, but to the living, divinely patterned human face, will and must be a firmly established and useful specialty of dental science, and if this is inevitable, as I believe it is, then it is fitting and proper that this society should be established, for our best efforts can only yield the best fruit in strong, earnest, sincere, concerted action.

We certainly have much to encourage us. In the effort to found this society many have been the encouraging letters received from earnest workers in this specialty, both in this country and in Europe, some of which will be read later. The time seems ripe for this organization. There has been criticism, it is true, regarding the organization of this society, but only from two or three sources—indeed I might more properly say that they were more in the nature of suggestions, to the effect that it might be better to confine our energies to the section of orthodontia of our National Dental Association. We will not here attempt to analyze the objections to this plan. We will only state that what might seem the most convincing reason in opposition to this plan is the same that has already been offered to the teaching and practice of orthodontia when combined with dentistry—in combination it must ever be made secondary and greatly handicapped, even in our National Association, and its history in that society certainly confirms this statement.

In the deliberations of this society now and hereafter let us not forget the great debt we owe to the many noble men who have worked so earnestly in this, our chosen field, and who, although often seriously hindered, have developed orthodontia so that it is possible for us to establish this organization. Let me mention with tender reverence the names of but a few: Fauchard, Schange, Fox, Harris, Wescott, Magill, and of those who are still with us, Kingsley, Baker, Guilford, Brady, Case, Matteson, Ottolengui, Jackson, Farrar and Goddard, the pictures of most of whom I now take pleasure in placing upon the screen.

In conclusion let me earnestly try to impress upon you that in proportion as we are sincere, broad, liberal, honest, earnest and studious will our efforts be successful and the prosperity of this society be insured; and on the contrary, in proportion as narrowness, selfishness and that bane and cause of dry rot of most societies—politics, be permitted to enter here, so will the efficacy of this society be blighted.

## **Disproportionate Development of the Upper and the Lower Jaws. A Method of Determining their Supra or Sub-Normality.**

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By W. O. TALBOT, D.D.S., Biloxi, Miss.

*Read before the American Society of Orthodontists at St. Louis, Mo., June 12, 1901.*

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Among the most conspicuous deformities about the human face are those that are due to the disproportion in the size of the upper and the lower jaws. We have irregularities and malocclusions of the teeth, due to their several causes, and when such abnormalities are confined to the disarrangement of the teeth in their respective arches, or to the simple mesial or distal occlusion of the lower jaw, such disarrangement is scarcely noticeable by the casual observer except when the lips are separated.

The average dentist may look upon such mouths with some degree of consideration, and picture in his mind the improvement in the expression of such persons, were their teeth properly arranged in the arches and the arches correctly adjusted to each other. But that which appeals even to the casual observer, which calls forth deep consideration from the average dentist, and which actually grates upon the feelings of the æsthetic who has studied and does properly appreciate the harmony in facial expression, is the over-development, or lack of development of either the upper or the lower jaws. This condition is disfiguring and often becomes embarrassing to the patient, especially if it be the case of a young lady.

Every dentist who practices orthodontia at all has such cases presented to him for treatment. The most important step, as in all disorders, is a correct diagnosis which must be reached if the treatment is to be successful. If there is a disproportion in the size of the jaws, that is easily recognized by the orthodontist, and before placing an appliance or fully determining a course of treatment he must answer these questions in his own mind: "Is the upper jaw too small, or the lower jaw too large?" and vice versa: "How can this be determined accurately?" To answer these questions is the purpose of this paper.

Since it has long been known that the length of certain bones of the body bear a definite relation to the length of the whole body of man, it is reasonable to conclude that all the bones of a man's body bear some definite relation to each other in size and length. The variation from this definite proportion serves to give variety to the stature and form of man. In searching for some rule of proportion in the size of the upper and the



lower jaws, together with the other bones of the face that have to do with the facial outline and give it expression, the writer, after having examined some twenty-five cases including the three classes of malocclusion given by Dr. Angle, has reached the following conclusions:

<b>Rules for Diagnosis.</b>	First, when the teeth are in normal occlusion and the "line of harmony" (Dr. Angle) applies, there are three points of the face that are in the circumference of a circle described by the compass with the condyle of the lower jaw as the center. These three points are: the point of the chin, the tip of the nose, and the frontal eminence about one inch above the line of the eyebrows.
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Second, when the upper teeth are in a normal position and the jaw normally developed, the point between the cutting edge of the upper central incisors and the concavity of the nasal bones on the ridge of the nose (between the eyes) are equally distant from the condyle of the lower jaw, measured with the compass.

Third, when measurement I applies and II does not, the deformity is in the upper jaw. If overdevelopment, the point of the compass in measurement II will not reach the edge of the central incisors. If the upper jaw is not sufficiently developed, allowing the teeth to crowd, the point of the compass will pass beyond the incisors.

Fourth, when measurement II applies and I does not, the deformity is in the lower jaw. If overdeveloped, when the point of the compass is placed on the point of the chin (the other on the condyle), and a circle described, the point will miss the nose and go high up on the forehead, and in extreme cases will pass over the forehead. If the lower jaw is sub-normally developed, the point of the compass when adjusted to touch the tip of the nose and the frontal eminence will pass over the chin.

The conditions set forth in measurement IV might occur to a slight degree in a case of simple mesial or distal occlusion, but that could be easily determined by the regularity of the teeth in the arches.

In measurement I, the condyle, the point of the chin, and the frontal eminence, where the arc of the circle strikes the latter, form an equilateral triangle. A special compass should be made for this work, with rounded points and a brace scaled with millimeters, by the use of which accurate measurements could be made and records kept.

The conclusions are not given as absolute measurements that apply to inanimate things, but as general rules that apply to that which is animate, subject to the variations of a human body that lives and grows according to its environment.

It is hoped that these rules may be of some service to the orthodontist who finds himself in doubt as to the true proportion in the size

of the upper and the lower jaws of any case he may have to treat, in recompense for which I would ask that all who have occasion to use such rules would put them to the test, and make a record of their findings, that those who are interested in the subject of orthodontia may be benefited thereby.

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### Greeting.

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By DR. W. BOOTH PEARSALL, Dublin, Ireland.

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My kind friend, Dr. Edward H. Angle, has given me the opportunity of taking part in his "*cead mille failthe*" (a hundred thousand welcomes) that has brought the first congress of orthodontia to St. Louis. I know of the great skill and enthusiasm that has assembled so many students of orthodontia together to confer upon the possibilities of this comparatively young development of dental science. I therefore send you my felicitations on such an auspicious occasion through Dr. Angle, as I cannot be present with you in person. I know my hearty good wishes will be received by you all in the same cordial spirit with which I tender them, for I have always met with great personal kindness and hospitality in the United States from my brethren, whenever I have visited amongst them.

This is the first congress that has been held for the consideration and development of the science of orthodontia. It is an opportunity not only for good words and congratulations, but to be used for consolidating and developing our ideas on the possibilities of great improvements in technique and research, likely to benefit both patients and practitioners. The definition of correct principles and methods—the careful classification and record of typical cases—the invention and development of scientific and accurate diagrams showing the movements of the human teeth, are all worthy objects for conference. I regard as of great importance the collection of all useful anatomical facts, whether we gather them from medical or surgical authors, from the anatomical departments of the many medical schools throughout the world, as well as the observations of anatomists whose writings have not yet obtained currency in our dental books.

**Importance of  
Collecting  
Scientific Data.**

There is much to be learned in this direction, despite the success of the empirical methods of some prominent orthodontists. It is to be doubted if any general progress can take place amongst practitioners, till such a foundation can be laid from anatomical sources, as will be strong enough on which to erect a structure to hold within its walls all the essential facts that are needed for the comprehensive knowledge of this important subject.

The practitioners who study orthodontia by the scientific method are few in number. When I use the word scientific, I mean that patient investigation and record of truths taken from reliable sources, and especially from anatomical preparations in museums. Were a small number of really earnest men to devote a little time to such investigations, and by means of casts, diagrams and photographs place on record well selected examples of malocclusion and their causes, as shown by anatomical preparations, our knowledge would in a few short years emerge from the semi-darkness so many of us have too long groped in.

An intelligent method of observation and study would bring to light valuable facts that would largely increase our knowledge, which should be used in dental schools and by practitioners throughout the world. I would earnestly advocate the election of suitable observers for such a collective investigation of crania. By their aid and discrimination, casts, preparations, diagrams and photographs could be recorded and published by a body interested in this subject. There is, I am convinced, a mine of information scattered throughout the world that only needs intelligent and patient working, not only to establish scientific truths, but to destroy much of the ignorance and jumping at conclusions many of us know to exist. I need not mention names, but we have much to do in the English-speaking world alone to correct the hasty judgments and faulty teaching of several practitioners, for we cannot call them scientific men, who have confused and embarrassed the minds of ordinary practitioners and students with regard to the value of the sixth year molar, for instance, and their views as to the prevalence and causation of types of irregularities in the position of the human teeth need much careful investigation from the scientific anatomical standpoint. Great harm has been done in practice by so-called "authoritative teaching" which has "jumped at conclusions" with baneful results in many mouths, as seen by tilted twelfth year molars, while the diastema caused by the extraction of the sixth year molars leaves the patient's condition, after months of painful treatment, worse than when the blundering methods relied upon for improvement were begun.

**Museum Collections  
for  
Colleges.**

I throw out these suggestions in the hope that a serious collective attempt will be made to investigate in this accurate manner the causes that underlie the malposition of so many teeth as seen in the mouths of the civilized races of mankind. Were accurate methods of study and record designed and formulated so that intelligent observers could take part in such a great work, much progress is possible by the patient record and publication of accurately ascertained facts. Casts, preparations, diagrams and photographs of perennial value could, by such effort, be placed in the museum of every dental school. By interchange of examples museums would have specimens by which they could correct the misapprehensions that may arise from merely *reading* about things instead of seeing them.

In 1893, at the meeting of the British Dental Association in Birmingham, I attempted to effect an improvement in teaching appliances and specimens by proposing the formation of an association of members engaged in dental teaching for collecting casts and specimens of educational interest, so that they could be selected and duplicated for school or other museums. Had my proposals been acted upon, we would now have in Great Britain and Ireland some valuable teaching or school museums. Such a movement would, I have no doubt, have been carried out in the United States, as the technic work has been carried out. If I may judge from a careful inspection of the few dental museums I have seen in Washington, Harvard, Cleveland, Buffalo, and in Chicago, such an organized and scientific work is badly needed. The meetings of the National School of Dental Technics would seem to me a suitable opportunity of exhibiting standard casts and preparations for approval, with a view of improving the teaching, or record of valuable facts. In such a body you have ready to hand an intelligent and discriminating society of experts in dental teaching in many matters of detail, whose approval and criticism, together with the help of the collective investigators I have proposed, would be accepted by many of us as authoritative.

Investigations of truth is attained by many roads, and if we make use of the most helpful and direct ways to advance we not only benefit the sufferers from loss of function caused by dental deformity, but we also advance ourselves in skill.

**Tooth Forms.**

We should begin, for instance, by formulating an anatomical standard of the forms of human teeth. It is very remarkable that although the printed anatomical descriptions and characteristics of the human teeth resemble each other, in different books, a close inspection of the illustrations given in them will show points of great divergence, both in the crowns and

roots of teeth, whether we study them in Hunter, in Fox, in Bell, in Tomes, in Trosseau or in Carabelli.

An independent investigation of my own and some correspondence with Mr. Chas. S. Tomes, the late Andrew Wilson of Edinburgh, and Mr. John Humphreys, who has worked with Professor Windle in Birmingham, will show, it is evident, that each of these investigators has found his own ideal. Illustrations in American text books show similar divergences, whether you wish to study normal or abnormal teeth.

We also need a more accurate nomenclature—

**Nomenclature.** one that will be acceptable to all English speaking dentists, describing the same conditions. We ought to be able to get rid of such barbarous terms as V arches, "saddle back arches," "jumbled arches" and that hateful term "anterior superior protrusion." Anatomists have for several years past confined the term maxilla to the upper jaw and avoided confusion by calling the inferior maxilla the mandible. We should follow up this more exact and reasonable view, as such a change would simplify matters and remove a constant cause of blundering.

Having taken advantage of Dr. Edward H. Angle's kindness to lay some of my suggestions before you, I wish to attract your attention to the views of the late Dr. Paul Albrecht, Professor of Anatomy at Brussels and at Hamburg, with regard to his theory of the number of the intermaxillary bones. Albrecht's work seems, so far as I can discover, to be unknown to dentists, although his theory is of the greatest interest to them. We have all of us observed that greater disturbances in the position of human teeth take place in the incisive and canine region of the maxilla than in any other part of this region of the mouth. His theory should be known to you all, as it has, in my opinion, an important bearing on much that needs correction in treatment. The novelty of his views and the careful research he applied for years to this important subject cannot fail to be of interest to you all. Strange to say, I have never seen his name nor his theory mentioned in any dental book, but, nevertheless, his theory is of interest to us all, whether we practice orthodontia, dentistry, or oral surgery. My daughter has made a translation of this interesting paper from the French, which I have supervised so as to avoid any mistakes from her lack of technical knowledge of the subject. The translation may not be perfect, but we have endeavored to make Dr. Albrecht's meaning quite clear. I have drawn his diagrams so that they can be readily studied at the places where they can be compared with the text of this original and able author.

It will, I am sure, be of interest to many to learn that the great German poet, Goethe, worked at this subject of cleft palate so successfully

that his views were held by many till Dr. Paul Albrecht brought forward another theory based upon careful study of actual specimens in several anatomical museums.

I have been familiar with Albrecht's views for several years and I cannot help thinking that some of the variations in the incisive and canine regions of the maxilla may be due to the unequal growth of the four intermaxillary bones described by him. I may add that I have seen skulls showing Albrecht's sutures, and I shall take an opportunity of photographing them for publication, if my suggestions on scientific research now offered to your congress should bear fruit in the formation of a collective body of observers throughout the world.

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### **The Laws of Articulation in Orthodontia.**

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By HERBERT A. PULLEN, D.M.D., Buffalo, N. Y.

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The normal masticatory apparatus of man, with the attachment muscles, is a very striking example of perfection in design and purpose, from the standpoint of geometry, physics and mechanics.

The bilateral arrangement of muscles, the shape of the arches, of the teeth, and their harmonious relation to each other, the form, size and position of the teeth with their cusps interdigitating for mutual support, the upward curve of the ramus, and the relation of the occlusal planes, all serve the purpose of increasing the efficiency of the organs of mastication, by providing the means, whereby a co-ordination and equilibrium of forces are secured, which are essential for the preservation and function of the organs themselves, as well as for economy of force, and the production of lines of beauty not possible in any other arrangement.

The laws of normal occlusion which have been so extensively elaborated by Dr. Angle, present to our minds the best description that has been published of the normal relations of the teeth in both arches when the jaws are in the position of rest, the mouth being closed.

Believing that a study of the relations between the two arches of teeth during the movements of the lower jaw dependent on its articulation at the Glenoid fossa, will be conducive to a more comprehensive knowledge of the diagnosis and treatment of certain forms of irregularities presenting in practice with more or less frequency, I shall undertake to record a few of the practical points that have been observed relating to the application of the laws of articulation to the correction of irregular teeth.

**Occlusion  
and  
Articulation.**

It is first necessary to emphasize the distinction between the terms occlusion and articulation, which is approved by the majority of the best writers in the dental profession.

Occlusion is the mere coming together of the teeth, cusps to sulci, in a position of rest.

Articulation is the relation between the teeth of the upper and lower jaws during the lateral and protrusive excursions of the mandible, dependent on its universal articulation at the Glenoid fossa.

Occlusion represents the static, and articulation, the dynamic relation between the jaws.

Occlusion is passive—articulation is *active*.

Dr. Snow divides articulation into three distinct stages: 1. Prehension. 2. Attrition. 3. Occlusion.

Occlusion then may be recognized as one of the *phases* of articulation.

The very fact that occlusion represents a static relationship between the jaws makes it obvious that it should be designated as the basis from which to diagnose and treat malocclusion.

In occlusion the lines of force are constant in their direction. In articulation they are ever changing, varying as the relationship between the jaws.

The influence of these forces in normal occlusion tend to preserve the continuity of the normal relationship. In malocclusion these forces tend to confirm the condition and often to intensify it.

It is also evident that a malocclusion necessarily creates a malarticulation, and the latter increases in degree as does the former.

Let us examine for a moment the jaws in normal articulation, moving the lower jaw to the left from the position of occlusion: "The right condyle moves forward and downward in the Glenoid cavity one-eighth of an inch, when at its farthest limit, causing the outer and inner cusps of the upper teeth from the centrals to the last molar, to touch the outer and inner, or buccal and lingual cusps of the lower on same side—the left; and on the opposite side—the right—we find only the inner cusps of the bicusps and molars of the upper, to come in contact with the outer of the lower, and the right central to the cuspid do not touch."

In moving the lower jaw to the right these positions are just reversed.

Again, if the lower jaw is moved directly forward from the position of occlusion, until the incisors touch edge to edge, the buccal and lingual cusps of upper second molars touch the buccal and lingual cusps of lower second molars.

In order that this articulation of cusps in the above movement may take place, the overbite must not only be proportionate in depth to the depth of the grooves in bicuspid and molars, but also the curvature upward of the ramus must be in the same proportion.

The depth of the cusps in the upper first bicuspid corresponds almost exactly with the depth of the overbite, the cusps diminishing in depth from first bicuspid to last molar.

The necessity for the touching of so many teeth during articulation is evident when we recall that the muscles of the jaws should act equally on both sides, even though but one side is in use at one time, the other side touching to balance the forces at work on the opposite side.

Such is the action of the complicated machinery with which Nature has endowed us for the mastication of our food.

Dr. Bonwill said: "It is mechanical law, and that of motion, to obtain a certain result for the perpetuation of the organs themselves, but the life of the whole organization, and the grooves, fissures and cusps are so arranged . . . that where each is in its normal position in the jaws all surfaces wear alike, and the shapes are kept in harmony."

Any interference with this arrangement, as extraction, not only limits functional power, but also renders some of the teeth imperfect from overuse, or malocclusion and malarticulation.

Quoting again from Dr. Bonwill: "It will enable you to see from this perfect articulation . . . that the study of these laws will enlighten you in the true science of correcting irregularities. When plaster casts are made of both jaws and placed in this articulator, you will see, as you never did before, how ignorant you had been and how criminal your treatment in such cases."

Surely, then, we must not correct irregularities of the teeth with an eye only to occlusion. If we do, we shall miss many important points bearing upon the success and permanence of our work.

It is not necessary to articulate the models of every case of malocclusion in practice, in order to observe the workings of these laws, for often they can be best observed in the mouth of the patient himself, and a conclusion drawn as to their harmonious working or the reverse, as may be discovered.

During regulation, any inharmony of articulation is usually manifest, and we can many times arrest it before any serious interference has taken place.

The operation of "jumping the bite" would be an impossibility were it not true that the lower jaw has the power of prehension.

In cases of protrusion of the first division, second class (Angle) when it is necessary to shorten the upper incisors by depression, by try-



ing the prehensile movement, we can tell when they are sufficiently depressed for their protection from the protrusive force of the lower incisors during this movement.

No cusp of any tooth should be allowed to remain so long that it alone touches during any period of the movement of mastication; for the tooth would soon be moved out of its position by the abnormal articulation, or it would become diseased through overuse.



Fig. 1.

Especially noticeable here is the prominence of the cusp of the upper cuspid after retraction in cases of this class. The harmonizing of the articulation is secured by shortening of the cusp sufficiently.

Again, in this class of cases, the lower incisors are almost invariably in supra-occlusion, and if this lengthened condition is allowed to remain after the protrusion of the upper teeth has been reduced, the condition will most surely return to a greater or less extent, due to the pressure

outward of the lower incisors against the upper during the outward and forward excursions of the jaw.

Besides depressing the upper incisors in their sockets in these cases, it is often necessary to depress the lower incisors as well as to elevate the lower bicuspid and molars at the same time, in order to harmonize the articulating plane of the lower teeth.

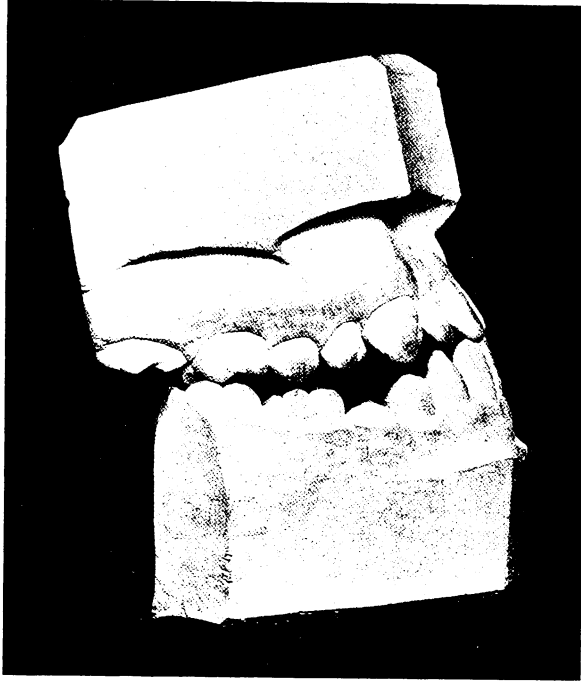


Fig. 2.

**The Law Illustrated  
by  
Practical Cases.**

The accompanying illustrations represent the models of a lipbiter of the first class, placed in the Bonwill articulator for observance of the laws of articulation. Fig. 1 represents the models with the teeth in the position of occlusion, showing the protrusion of the upper incisors.

Fig. 2 represents the same models during the extreme stage of the movement of prehension, and illustrates the effect of the outward pressure of the lengthened lower incisors against the upper incisors, increasing their protrusion to the exact limit of the prehensile movement of the lower jaw.

I think this illustration is a very fair proof of the law above mentioned, viz.: the depth of the overbite being governed by the length of the cusps in bicuspid.

In this case the lengthened incisors, above and below, would tend to create a greater overbite than the depth of cusps in the bicuspid and molars would allow, but the forces of articulation have secured the proper overbite at the expense of the upper incisors which presented the least resistance in its accomplishment.

Another proof of this law may be noticed in the mouths of patients, who have what is called the "end to end" bite, in which case all of the

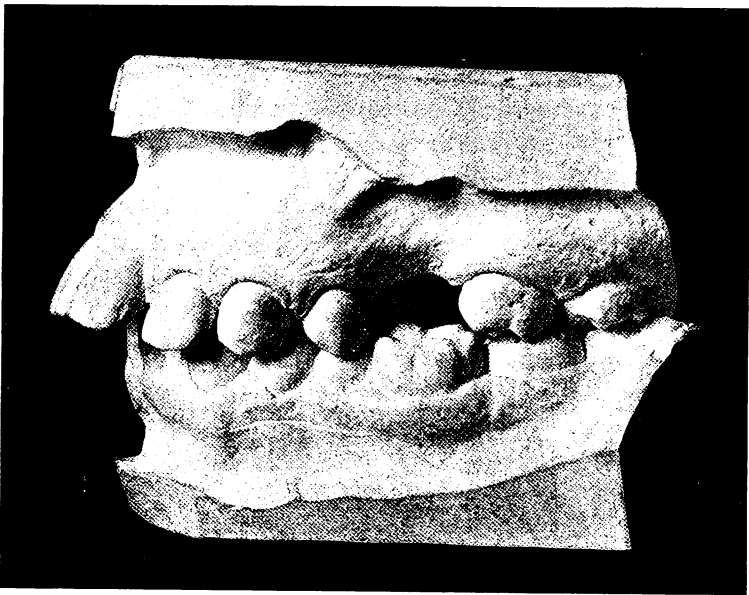


Fig. 3.

teeth of the upper jaw occlude end to end with lower teeth, there being no overbite at the incisors, and the bicuspid and molars being without cusps, also having no overbite. The laws of articulation thus often prevail at the expense of the cusps of the teeth.

The figures 3 and 4 illustrate the same forces of articulation at work as in the first picture exhibited, although the case is one from another class of malocclusion, the lower jaw being distal to normal, being Class 2, first division (Angle).

If the fixed laws of normal occlusion demonstrate the evils of extraction, even more are they noticeable in the crippling of the articulation. Nature can patch up an occlusion rendered faulty through extraction to

some extent, but it is very difficult for her to patch up the articulation in such a case.

The possibility of the restoration of faulty articulating planes belongs to a practically new field, and is deserving of our study, for until we can accomplish this, our results will never be perfect.

The complete restoration of articulating planes is not within the limits of the methods of operation at the present time, except in a few cases, uncomplicated by extraction. Nature of course does the best she can in securing harmony of cusps and inclined planes during articulation, after the teeth have been placed in their correct positions in the arch.

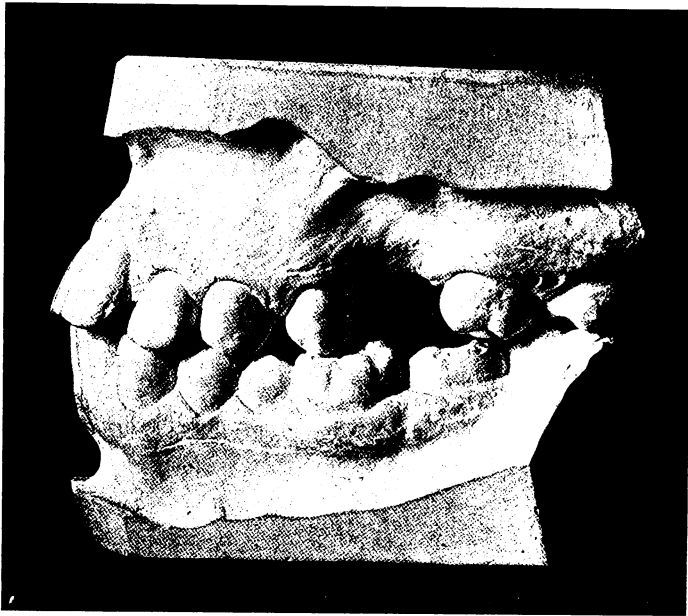


Fig. 4.

To the student of these laws, the gag-plate is an impossibility, as well as is every other appliance which interferes so seriously with occlusion and articulation.

In the application of appliances for retention, one must take care that they do not interfere with the movements of articulation.

I believe with Dr. Bonwill in a premeditated type—that "the incisors show a definite fixedness of purpose to arrange themselves after their typical shape and to form the overbite at a given depth, for the accommodation of the bicuspid and molars, which appear soon after, having cusps of a definite length, so that the law of articulation, which has

been premeditated to a certain typical shape and construction, may be carried out."

By measuring the depth of the cusps in the bicuspid in a case of malocclusion in which the upper incisors are in infra-occlusion, we know the approximate overbite of the incisors, and can base our operations for treatment accordingly for the restoration of the normal overbite.

A study of the construction of the arches of teeth upon the equilateral triangle will give us an idea of the definite basis from which to work, e. g., with a definite form of the arch in mind, the changes necessary to make in the shape of expansion arches will be indicated by any deviation from the normal type as well as the degree of expansion or contraction in a given case.

In conclusion, let me repeat that the laws of articulation are important aids to us in diagnosis, prognosis, and treatment of malocclusion, to appreciate which we should note their working in each case presenting, not only with the view of gaining personally by so doing, but also with the possibility of discovering new practical points tending to progress in our chosen specialty, along lines which promise much, and toward which I can only point the way.

### **Some Points Concerning Occlusion.**

By WILLIAM J. BRADY, D.D.S., Iowa City, Iowa.

*Read before the American Society of Orthodontists, at St. Louis, Mo., June 12, 1901.*

(Illustrations by the author drawn especially for ITEMS OF INTEREST.)

There is nothing more constantly before the dental practitioner than the consideration of the occlusion of the teeth. It is a factor to be reckoned with in nearly all operative procedures, especially those that involve any restoration of the contour of the teeth, and it is one of the vital points in every prosthetic operation, including the vast sphere of crown and bridge work. Scarcely an operation is performed within the fields mentioned that is not in some way materially influenced by the occlusion of the teeth, and yet nothing is more constantly overlooked and disregarded.

In the great and growing realm of orthodontia, the occlusion of the teeth is the central figure around which all other portions of the subject are grouped, and to which they are vitally connected. It is the very basis of the subject and is worthy of our deepest study, for an understanding of it is absolutely necessary to any lasting success.

Any other foundation for our specialty must prove a quicksand in the end, as has been abundantly proved by the earlier practice in ortho-

dontia, which was built upon the basis of mere appliances and the mechanical details of moving malposed teeth, rather than upon the reasons for changing (I will not say correcting) the positions of the teeth in question.

It was not until the occlusion of the teeth was fixed upon as the basal principle in orthodontia that the subject was placed upon a basis where any systematic and orderly plan of study and treatment was possible. With this basis established, however, means were provided for a definite and intelligible classification and diagnosis, and for equally as definite and intelligent plans of treatment, and orthodontia was removed from chaos and confusion to order and precision.

I do not unduly eulogize the discoverer of this great basal principle of our specialty when I say that he must be recognized as the father of modern practice in orthodontia. Angle's classification of malocclusion is to orthodontia what grammar is to a language, and it will be a monument to the author long after his bones have crumbled to dust, and Mother Earth has claimed him for her very own.

The idea of making occlusion of the teeth the great starting point in the study of orthodontia is so comparatively recent, and so absurdly simple, that the majority of the profession have as yet not grasped its meaning, and many even do not know of the discovery of this great principle. Even some of those who have given attention to orthodontia do not yet realize what it means, and others yet will not, even though they might, but prefer to remain in the dim light of the ancient tallow candle of mere appliances, and surrounded by the confusion of continued experiment and never-ending invention.

Let us hope that the time will soon come when all who give attention to orthodontia will grasp the full meaning of occlusion of the teeth, and that the time and energy now wasted in considering appliances (and most of them "back numbers" at that) may be turned to better service and to some lasting good.

While the occlusion of the teeth has been and still is disregarded in a vast majority of operations where it should be most carefully observed, and while most practitioners are indifferent to its importance, yet it has been the study of some of the great minds that occasionally illuminate the dental firmament.

It is not necessary to set forth in detail the writers and what they have said upon this subject in order to discuss a few special points. The present writer does not claim any originality or new discovery in the material presented, unless it be a better arrangement and clearer presentation of some facts. This paper will not attempt to consider more than some of the mechanics concerned during the operation of occlusion, and the

exact form of the dental arch resulting from the same, when Nature's plans are not counteracted or disturbed.

**Occlusion.** Occlusion of the teeth means more than merely the striking together of the upper and the lower teeth.

The subject also includes the relative position of the lower jaw to the upper and the peculiar form of movement that the lower jaw undergoes during the process of mastication, together with the mechanics of the forces operating during this movement, which compel a dental arch of a certain definite form to permit of usefulness.

A study of occlusion also includes consideration of the form and size of the two jaws and the superimposed alveolar processes, together with the anatomical relations of the temporo-maxillary articulation. It includes the study of the effect of nasal or pharyngeal troubles upon the development of the jaws and the shape of the arch, and coming down to the teeth themselves includes the time and manner of their development, absorption and eruption, with the very great influence that the lips, cheeks and tongue exert over their assuming their proper places in the dental arch following eruption, as well as the mere accidents of dentition that affect their positions. Going still further it includes a study of the forms of the individual teeth, with their relative sizes and the shape and number of their ridges, grooves, sulci and cusps. Last, but not least, occlusion involves a most careful consideration of the occlusal planes of the teeth, and a most particular study of exactly how and where each and every cusp, ridge and surface occludes with the opposing teeth, not only during a state of rest but during the movements of the jaw as well.

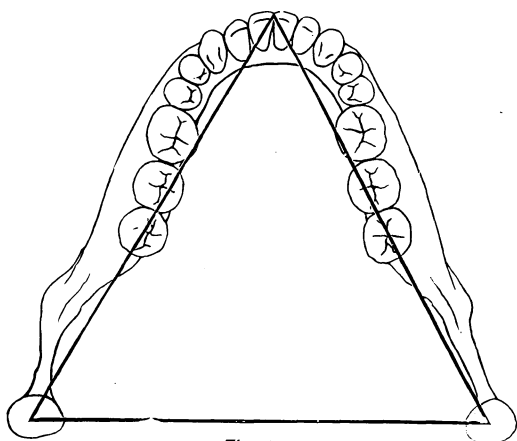
**Articulation.** It has been argued that the old term articulation was more comprehensive than the term occlusion, inasmuch as it meant the gliding of surfaces over each other. But the term occlusion has been enlarged to mean all ever meant by articulation, and a great deal besides, and being a more modern term, which has already entered into the nomenclature of dentistry in combination with other words, it seems well to drop the old articulation and use occlusion in its stead entirely. Terms mean just what we make them mean any way, so why not once for all settle that we mean the entire subject in its broadest sense when we say occlusion?

**Dental Arch.** Much has been said about the shape of a perfectly formed dental arch, and it has varied from the simple description of the old farmer that "it was shaped like a hoss shoe, toe for'ard," up to a presentation of complex geometrical figures so complicated as to be past all understanding by any ordinary person.

This much is settled, however, the perfect dental arch has a certain definite form not difficult to understand, and this form is largely produced by the mechanics of the movement of the lower jaw. Both upper and lower being largely dependent upon each other as regards form, the ideal arch of one jaw has its ideal counterpart in the other, and both follow the same geometrical form.

The late W. G. A. Bonwill was undoubtedly the pioneer observer and writer regarding the occlusion of the teeth, but unfortunately he was never fully understood nor appreciated. His observations are the foundation of these notes, although they differ slightly upon some points.

Bonwill long ago established the truth that the lower jaw comprises an equilateral triangle from condyle to condyle and a point between the lower central incisors, and upon the labial surface thereof. (Fig. 1.) This has often been shown before, but the corresponding triangle of the upper jaw has never been illustrated to my knowledge. In this the points of the triangle are located near the centers of the glenoid fossæ, and upon the



*Fig. 1.*

lingual surfaces of the upper central incisors, and at a point about one-third the distance from their incisal edges to their cervical margins. (Fig. 2.)

This observation regarding the triangle found in the jaw of man was not made hastily, but was settled upon after the measurement of very many skulls of different races, of both ancient and modern time. While there are of course some slight variations to this condition, yet it is the rule in an overwhelming majority of cases, and any one doubting its accuracy will soon be convinced upon a little private investigation.



**Movement of  
Lower Jaw.**

The next point to consider is the movement of the lower jaw. The animal man has three distinct movements to his mandible: the open and shut or hingelike movement, the forward and back or antero-posterior movement (the incising movement), and the side to side or lateral movement. There may also be a combination of the antero-posterior and lateral movements, resulting in a rotary sort of gyration, but this is only occasional, and no mastication or other service is performed by it, so it may be left out of the question altogether.

Of these movements of the jaw, the lateral is the one performing the greatest service in mastication, and the one having the greatest influence upon the shape of the arch. It is a complicated movement, and one which must always be considered in orthodontia. Its influence is great either in assisting us or in undoing our work, and woe to the orthodontist who fails to reckon with it.

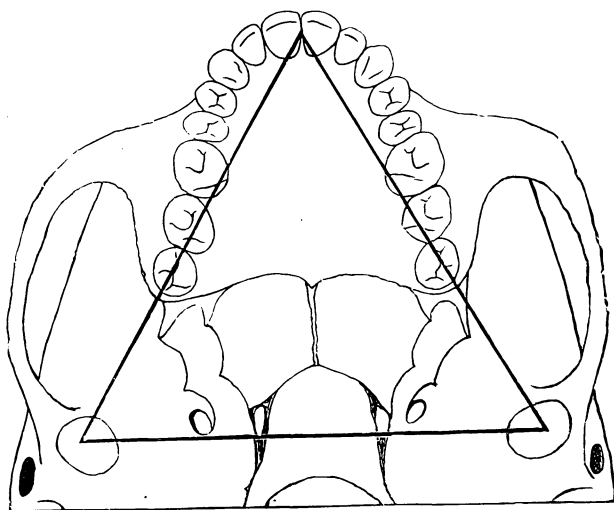


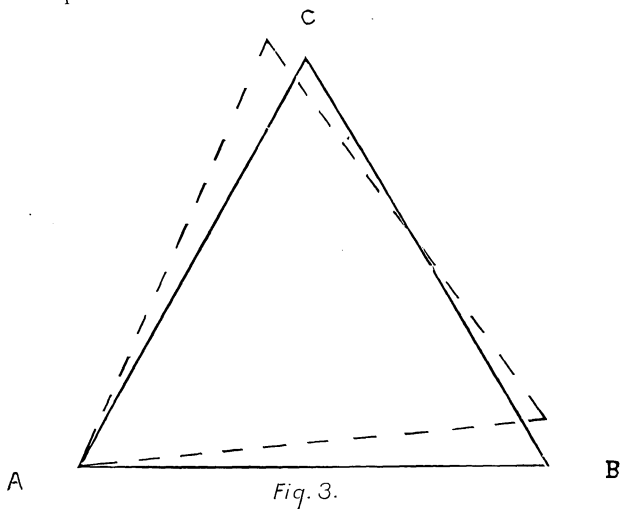
Fig. 2.

It might be said also that it is just as important to the prosthodontist, and that he of all men ignores it the most. Not a crown nor piece of bridge work, not a denture of any kind, large or small, is made but this movement of the jaw should be almost the chief feature considered, and yet we daily find it the general practice to use articulators that give only the straight open and shut movement, making consideration of the lateral movement of the jaw an utter impossibility. All this, too, in face of the fact that the anatomical articulator of Bonwill has been before the dental practitioner for over forty years.

There is no excuse for ignoring the lateral movement of the jaw with this instrument to represent it. It might be added that the Bonwill articulator is an absolute necessity to the orthodontist, and should be used in nearly every case.

When the lower jaw moves laterally, the motion becomes a rotary one, and one or the other of the condyles becomes the center of motion, while the whole jaw rotates upon this center. The condyle at the center performs practically no motion except to rotate in its socket, while the opposite condyle moves considerably.

The point between the central incisors being the same distance from the center of motion as the moving condyle, the motion of the two points must be equal, as seen in Fig. 3. In this figure, the point of the triangle at C moves an equal distance with the point at B, while the triangle rotates about the point at A.



The same is shown applied to the lower jaw in Fig. 4, where it is seen that as the jaw moves a certain distance laterally in the region of the incisors, one of the condyles moves an equal distance forward, while the other condyle rotates in its socket. It might easily be supposed that one condyle moved backward while the other moves forward, but such is not the case. The ligaments of the temporo-maxillary articulation do not permit it. There can only be motion forward, and except the rotation of the condyle in its socket, there is no motion except upon one side at a time.

It is seen that this is simply reversed when the jaw moves laterally to the other side, so that there is the same condition of things no matter to which side the jaw moves.

It is also seen that when the jaw is thrown to one side, for instance, the right, that the molars and bicuspid of the right side are made to slide over each other linguo-buccally, while on the left side they slide over each other antero-posteriorly. The incisors of the right side slide across each other nearly labio-lingually, and occlude in such a manner as to perform considerable incising, while those of the left side perform none.

#### **Mastication.**

Considering the matter further, we see in Fig. 5, Fig. 6 and Fig. 7 that when the jaw is thrown to the right, the teeth are in contact upon that side from the central incisor back to the last molar, while upon the left side they are in contact at only one point upon a posterior tooth. It is thus seen that mastication takes place upon only one side at a time, or at least heavy crushing and grinding (which is performed best by the lateral move-

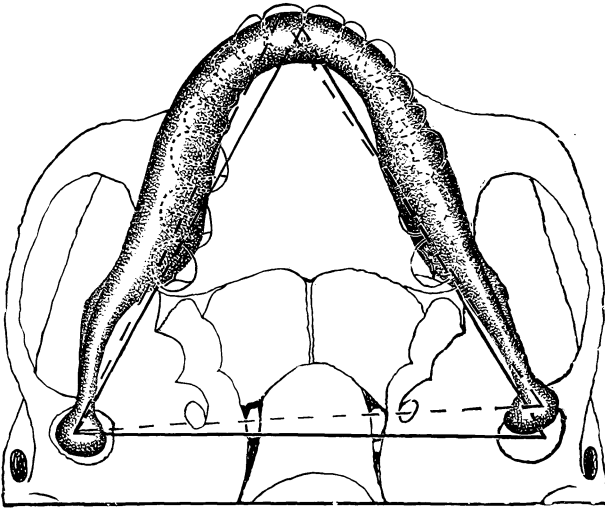


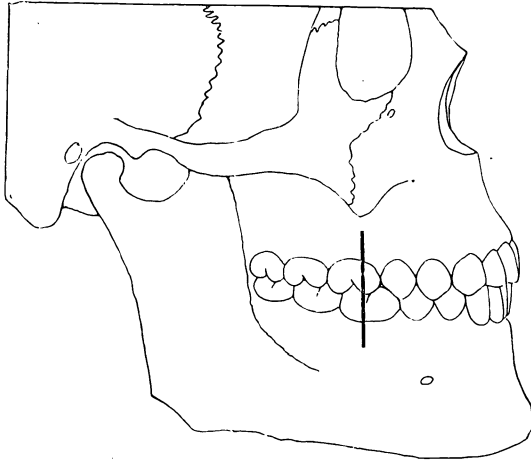
Fig. 4.

ment of the jaw) is possible only on one side at a time. Some crushing is possible upon both sides at a time by the simple hinge motion, but this is not used in work requiring much real cutting and grinding.

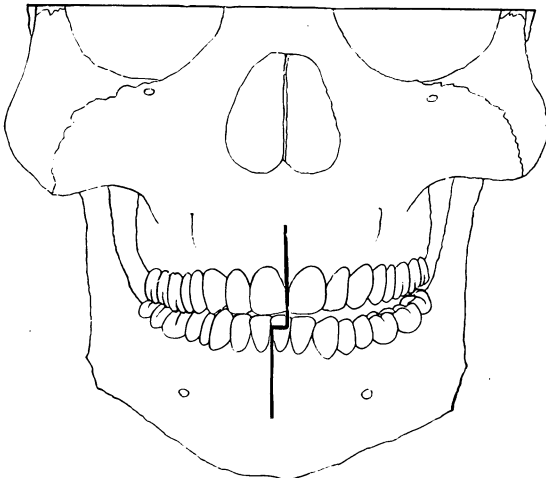
A further illustration of the crushing power of the lateral movement is shown in Fig. 8. It is there seen that there is grinding and cutting only when the jaw has been thrown to one side and returns to its original position; that it is upon the return stroke that the work is done and not upon the initial movement, as the tendency during this movement is to push food out from between the teeth rather than in between the cusps.

The buccal slope of the buccal cusps of the lower also shears against the internal slope of the buccal cusps of the upper, and this shearing or

cutting performs a great deal of work with comparatively little force, the same as a light pair of shears may cut a sheet of metal with but little effort, while it would require great force to cut the same metal in two



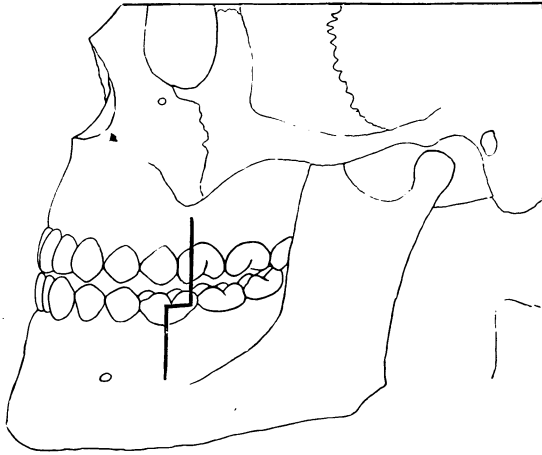
*Fig. 5.*



*Fig. 6.*

with a chisel. It is this shearing or cutting by cusps gliding over each other that performs most of the work of cutting up our food. If we were compelled to crush our food by straight crushing force alone, we would require jaws and masseter muscles like a hyena.

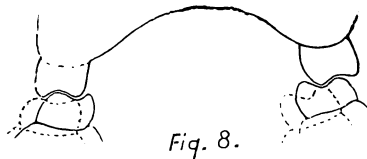
Fig. 8 does not correctly show the occlusion of the side opposite from where the work is done, but shows that some contact on that side is necessary and is normally present to keep the muscles of mastication from drawing the jaw unduly forward on that side. The muscles of mastication contract equally upon both sides even though work is performed on one side only, as may be seen by trying to bite hard on one side of the



*Fig. 7.*

mouth without contracting the muscles of the other. By considerable practice one side may be contracted at a time, but ordinarily both sides contract alike, at least so far as the masseter and temporal are concerned.

Returning to Figs. 5, 6 and 7, we see that all the occlusal planes of all the teeth on the right side are being utilized during mastication on



*Fig. 8.*

that side. Both buccal and lingual rows of cusps on the molars and bicuspids are interdigitating in the most perfect manner, and each tooth, whether upper or lower (excepting the upper third molar), is occluding with two opposing teeth. We thus see what a powerful factor each tooth is in determining the position of both its antagonists and its neighbors, and we see the combined influence of all the lower teeth of one side exerted upon all the upper teeth of that side, and vice versa. Each tooth is held in place by two others, and in its turn helps hold them in their places.

If one tends to move, it is resisted by both its antagonists and its neighbors, but if it does move out of place, it also disarranges more than itself. Men that go wrong usually work havoc upon many others also.

**Influences of  
Occlusion  
on Form of Arch.**

We see the influence of the teeth upon each other, and these combined influences create the form of the arch. If these influences are all in harmonious relation to each other, the result is a perfect articulation and a perfectly formed arch. If inharmonious in any way, the result is malocclusion to the extent of the inharmony.

We not only see the influence of the harmonious relations of the teeth in creating the arch, but what is equally important, in maintaining the arch in perfect form as well. This must not be overlooked nor underestimated. It is necessary to have a perfect occlusion all along the line to have a perfect maintenance of the arch. The molars—even the second and third—are just as important in their effects upon occlusion as the other teeth. Unless these teeth allow perfect antagonism of the other teeth during the movements of mastication, a slight malposition of one of them may allow or even promote the return of a malocclusion that has otherwise been corrected.

The lateral motion of the jaw must be reckoned upon, for it continually occurs and is a powerful factor in determining the position of the teeth. Heavy mastication usually occurs upon its use, during which much force is brought upon the teeth, when the tendency is to firmly lock the teeth in the proper place, if they are properly located, and equally as effective in tending to force them into another and improper position, if wrongly placed.

Because the lower jaw comprises a triangle, and on account of its motion as described, the teeth are forced into a certain form corresponding to its motion. If the jaw was of a shape other than an equilateral triangle, or if it moved in a different path from what it does, the dental arch would be of different form, else occlusion could not occur. The teeth are dragged into the present form of arch by virtue of their cusps and interdigitations, and their positions as well as their very shapes and sizes are a product of the mechanical forces operating upon them.

Knowing the shape of the jaw and its path of movement, we are able to determine the form of arch that is produced under favorable circumstances, as well as why it is produced. We are also able to see resemblances of and efforts towards this form of arch even in malocclusion, for Nature intends every arch to be perfect in form. If we can illustrate and analyze the perfect arch formed by a normal occlusion, we have a standard and a guide in our work; an end to strive to attain in our operations. We would have the assurance that if our cases of malocclusion were reduced

to this perfect form of arch, there would result a perfect occlusion in all particulars, which would maintain itself when the help of retaining appliances were finally removed.

It is possible to formulate rules for the formation of a dental arch in which there will be perfect occlusion when completed. The sceptical will no doubt say "important, if true" to this statement, but it is both true and important.

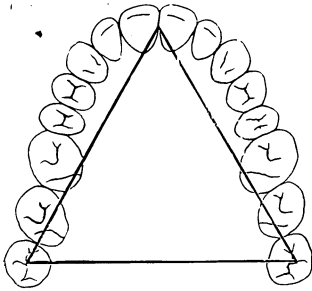


Fig. 9.

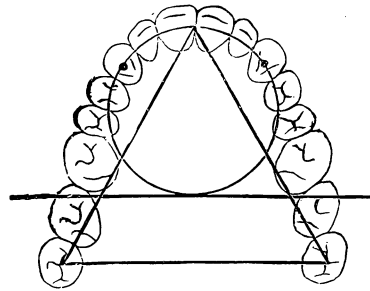
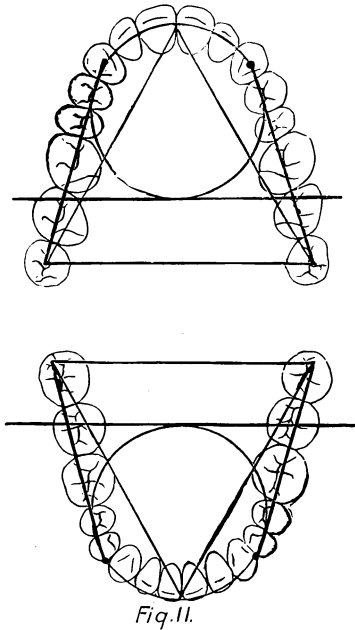


Fig. 10.

#### Geometry of the Arch.

If we return to Figs. 1 and 2, we see that the sides of the triangle pass through the third molars. If we connect the sides of the triangle together at this point, we create a smaller triangle, but one which is equal sided, as any such division of an equilateral triangle still leaves another equilateral triangle. This smaller triangle furnishes another base in our further study of the arch. In the upper, the points of the triangle are located in the central fossæ of the third molars, and at the point on the lingual surfaces of the centrals before noted. The disto-buccal cusps of the lower third molars normally occlude in the central fossæ of the uppers, and the points of the triangle of course should be located on these cusps for the lower jaw with the forward apex, as has been noted before. (Fig. 9.)

Next after the establishment of this triangle is the fact that the six anterior teeth are arranged around a segment of a circle. The size of this circle varies according to the size of the teeth, but always bears the same relation to the arch, whether the teeth be large or small. Bonwill gave a most elaborate way of determining the size of this circle, but a simpler and a quite accurate way is to draw (or imagine) a line connecting the mesio-buccal cusps of the upper second molars, and then produce a circle just large enough to extend from the forward apex of the triangle to this line. (Fig. 10.) The six anterior teeth should follow the curvature of this circle. In the lower arch, the line extending from molar to



molar should be drawn where the cusps of the uppers occlude, which is in the buccal groove of the lower second molars.

In the upper the circle passes on the lingual side of the centrals, laterals and cuspids, and in the lower on the labial side of these same teeth. On the upper a point is noted on the cuspid about the center of the tooth and just within the cusp. On the lower a corresponding point is noted at the disto-labial margin of the cuspid, almost against the first bicuspid. From these points a straight line extends backward to the corners of the base of the triangle, and this line passes through the sulcus between the buccal and lingual cusps of the molars and bicuspid in case



of the upper, and along the summit of the buccal cusps of the molars and bicuspid in the lower. (Fig. 11.) It is commonly supposed that this line is more or less curved, but the examination of a number of models will disprove this. The line is straight, even in most cases of malocclusion, and the supposed curve is an illusion caused by the varying bucco-lingual diameter of the bicuspid and molars. The buccal surfaces of these teeth describe a curve, but the line through their sulci or along their buccal cusps is straight. The reason for this is that the greatest power results from this straight line, and the constant movement of the jaw in its appointed path has gradually forced the teeth into this very form.

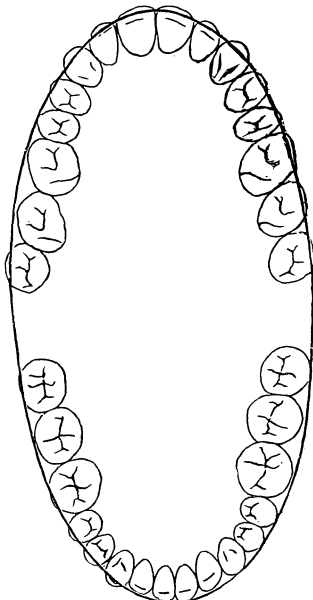


Fig. 12.

There now has been shown certain definite rules and lines concerning the dental arch, and teeth arranged along these lines will articulate perfectly if normal in size and shape. There is a tendency among some to scoff at the idea of arranging a dental arch along these or any other lines; the claims are made that they do not fit all cases; that temperament varies the arch; that some allowance must be made in individual cases; and even that the whole thing is impractical and utter nonsense.

The facts are that if Nature were not thwarted in her purposes, every dental arch would be upon these perfect lines. The mechanics of the case

compel an arch of this form to permit of the highest usefulness, and the mechanical forces of mastication produce this arch as nearly as possible. Even in malocclusion the teeth follow this perfect form just as much as the mechanics of the case admit. The mechanics of the case demand an arch of a certain definite form because of fixed and unchangeable laws, and not because somebody thinks it ought to be that way, or because it makes a pretty diagram on paper. As long as the jaw comprises an equilateral triangle and rotates upon one condyle at a time when moving laterally, just so long will this form of arch be the one unvarying end that Nature tries to attain in her way and be the one final result that we should seek in our work. Until the lower jaw changes its form or its motion, all men will (or should have) arches of the present form, and race, color, temperament, or hobby, fad or ism will not change the facts in the least.

The writer believes that the old description of the dental arch that it "describes a parabolic curve," or "is elliptical in form when the two arches are combined," is too indefinite for modern needs. Neither a "parabolic curve" nor an "elliptical form" are fixed figures like the circle, the equilateral triangle or the straight line. A watermelon is "elliptical" in outline, yet no one would regard, "shaped like a watermelon" as a very definite description.

It is true that measured from the buccal and lingual surfaces, the arch does describe an ellipse or parabolic curve (Fig. 12), but different teeth have different labio-lingual diameters, and while the "business end" of different sets—the buccal row of cusps in the lower and the sulci of the uppers into which these cusps fit—may conform to the lines laid down, yet the "curve" and the "ellipse" would be a varying quantity in each and every set.

In conclusion let it be said that only a few of the points concerning occlusion have been touched upon, and these notes must not be taken for anything more than their title indicates. Nothing has been said of the curvature of the dental arch according to the length of cusps and overbite, nor of the movement of the condyle within the glenoid cavity, nor of the anatomical characteristics of the tempero-maxillary articulation nor of many other things that would be needed to make a complete article. Indeed it would take a volume to present the subject of occlusion in its entirety. If these few points prove of benefit in establishing even part of the truth, the writer will be content, and in the future a more ambitious attempt may be made.

## A Critical Review.

By RICHARD SUMMA, D.D.S.

*Read before the American Society of Orthodontists at St. Louis, Mo., June, 1901.*

Orthodontia is that department of dentistry which has but recently emerged from chaos, a science. An understanding of its fundamental principles has been placed within the grasp of every one interested in dentistry. Since the general practitioner is called upon to advise in all matters pertaining to the welfare of the organs of mastication, he must henceforth include one other branch when rendering an opinion. Formerly the dentist searched but for defects caused by decay; of late years the intelligent practitioner added to his responsibilities the prevention and alleviation of diseased conditions of the structures immediately surrounding the teeth, and now it has also become his duty to prevent and correct malocclusion of the organs of mastication.

While it may not be the desire of every dentist to undertake the correction of malocclusion, all should be sufficiently conversant with the fundamental principles of orthodontia to recognize the initial stages of malocclusion and consequently expend his efforts in operative and prosthetic dentistry in a manner best calculated to retain and restore normal occlusion. It is the general practitioner who has the earliest opportunity to warn the young patient of an approaching malocclusion which in the course of a few years would both impair mastication and destroy the harmony of facial lines. Being able to recognize such a condition early, his warning will be of inestimable value to his patient and he may have the great satisfaction of conquering one more of the hitherto supposed inevitable evils.

I know that many conscientious dentists have despaired of ever being able to correct malpositions of teeth; others have considered orthodontia a snare and a delusion after having attempted to correct malpositions of teeth according to methods void of fundamental principles. Orthodontia, not unlike other branches of dental science, has also suffered from the curse of too frequent publication of superficial and therefore misleading and misrepresenting articles. No doubt, the fact that most writers upon this subject have considered their orthodontia cases side issues, accounts for the glaring superficiality and carelessness displayed in these articles. Dentists had, and, I am sorry to say, many dentists still have but a vague idea of what really constitutes a malposed tooth. It is true, certain forms of malposition cannot evade detection by even the most careless eye and are therefore treated by some so-called simple method and corrected—

only by the engraver's pencil; while other malpositions are not recognized at all.

Every one at all familiar with the literature upon this subject has seen hundreds of illustrations of malposed teeth. Many of these presented only a part of one arch; about the same number of pictures presented one entire arch; while but a very small proportion showed occluded models. These illustrations offer conclusive proof that the writers recognized only the fact that a certain tooth or certain teeth occupied one or more of the seven possible malpositions. He did not know that the normal as well as the abnormal position of a tooth depends not only upon its relation to the adjoining teeth of the same arch, but also upon its relation to its antagonists of the other arch. He did not realize that abnormally as well as normally posed teeth were being retained in their respective positions not only by virtue of their approximal contact, but also by virtue of their occlusal contact. Had he been aware of this fundamental principle, he would have been aware of the absolute necessity of breaking up this abnormal contact and bringing about an improved occlusal contact when correcting malpositions.

*"Occlusion is the basis of the science of orthodontia."*

In these few words Dr. E. H. Angle has revealed to us the secret which had so long obscured our aim in the correction of malposed teeth. The day of recognition and application of this fundamental principle marks the beginning of modern and true orthodontia.

This basis having been established, what could have been more logical than a classification of maloccluding teeth based upon their relation to normally occluding teeth? This grand diagnostic means is given us in the *"three classes of malocclusion."*

Second in importance to the recognition of occlusion as the basis of the science of orthodontia has been the decided preference shown by modern orthodontists for the employment of *"fixed appliances"* to the entire exclusion of the *"removable form of appliances."* It might seem a waste of time to call attention to this advance, were it not a fact that recently a writer upon this subject informed the readers of his journal that in many instances the much derided plate, even when made of vulcanite, is vastly superior as well as more quickly constructed than the fixed skeleton form of appliance.

When reading about the vast superiority of removable appliances over the fixed skeleton appliances, we are caused to wonder what revelation the author of such claim has in store for the patient reader.

For sake of emphasis I repeat my claim that plates, when used as regulating appliances, are detachable, ever-loosening, bulky, foul-smell-

ing and crude. The modern gracefully proportioned, beautifully finished and efficient skeleton form of appliance can be more rapidly adjusted and at the same time more accurately adapted to the requirements of any case. Only the fixed skeleton appliance permits of the employment of the various indispensable kinds of anchorage and the exercise of the absolutely necessary even and uninterrupted pressure.

In the face of these indisputable facts we must wonder what motive there can be to induce any one to uphold, yea, resurrect removable appliances, especially in the form of rubber plates.

Again, the combined result of our recognition of occlusion as the basis of the science of orthodontia, the Angle classification of malocclusion and the employment of fixed skeleton form of appliances has permitted us to accomplish the restoration of the normal contour of the face.

**Dr. Goddard's  
Work  
Criticised.**

The correctness of these teachings of modern orthodontia having shown itself capable of proof by abundant clinical experience, it is surprising to note that some recent publications betray the fact that all writers have not been able to keep pace with the rapid advance of modern orthodontia. It is especially to be deplored when writers of text-books fail, for any reason whatsoever, to present to the student anything but the latest accepted teachings. I deem it not only the privilege but the duty of every one interested in the welfare of a science to criticise faulty and obsolete teachings in order to hasten their early elimination.

In accordance with this conviction I herewith present a critical review of the chapter on orthodontia in the latest edition of "The American Text-book of Operative Dentistry." Considering this chapter as a whole, the reader is impressed by the fact that it belongs to that unfortunate class of compilations of methods of others in which "the salient features for insuring success are not mentioned." One, familiar with such compilations, will readily recognize the vast majority of appliances suggested in Dr. Goddard's chapter as *old* acquaintances. Most of these appliances have accomplished anything but the result expected of them. Their employment cannot but harm any and every one concerned in their application and their resurrection in a modern text-book, for any purpose except as a matter of history, must be considered a great injustice to orthodontia at its present advanced stage.

Dr. Goddard begins this chapter by devoting a few short paragraphs (29 lines) to the normal arch, the ideal facial profile and normal occlusion. These important subjects are treated so superficially and consequently minimizes their value to such an extent that one not previously

acquainted with their importance is caused to wonder why they are mentioned at all.

On page 685 of "The American Text-Book of Operative Dentistry" Dr. Goddard writes: "Malocclusion may be of many kinds and degrees, to which no general description can be given. The nature of such malocclusion of the arches as a whole may be indicated by the position of the second lower bicuspid, which is the key to the occlusion; according to its position the occlusion of the arches may be described as normal, distal, mesial, lingual or buccal.

If the key tooth, the second lower bicuspid, closes between the upper bicuspid, with its buccal cusp between their buccal and lingual cusps, the occlusion of both the key tooth and all the others is normal."

Dr. E. H. Angle's classification of malocclusion was published in the *Dental Cosmos* of March and April, 1899; Dr. C. L. Goddard's chapter on orthodontia was published in the fall of 1900. Therefore, the statement that no general description can be given to malocclusion must be construed either as a serious and inexcusable oversight or as a declaration on the part of the author of the incorrectness of the classification as taught by Dr. Angle and proven by clinical experience to all who have investigated this subject.

If the key tooth, the second lower bicuspid, occludes normally, Dr. Goddard would have us infer that all other teeth occlude normally. According to this statement the doctor ignores all malocclusions found anterior to the cuspid, *the great first class*.

On page 712 we find the following: "For convenience in description, irregularities are here arranged in fifteen classes. The first six have reference to single teeth, and nearly all the rest to the arches as a whole in relation to each other and to the contour and profile of the face.

(In order to compare the Goddard arrangement of irregularities with the Angle classification of malocclusion, I herewith present them side by side.)

#### DR. GODDARD'S ARRANGEMENT.

1. Lingual eruption: A tooth erupted lingually.
2. Labial eruption: A tooth erupted labially.
3. A tooth rotated.
4. A tooth extruded.
5. A tooth partially erupted.
6. Several teeth in any or all positions.
7. Prominent canines and depressed laterals.
8. Pointed arch. (V-shaped.)
9. Upper protrusion.

10. Lower protrusion.
11. Double protrusion.
12. Constricted arch. (Saddle-shaped.)
13. Lack of anterior occlusion.
14. Excessive overbite.
15. Separation in the median line.

Oh, what a return to chaos! No sooner have we been taught a distinction in nomenclature and significance between malposition of teeth and malocclusion of the dental arches when we are again confronted by this confusion.

The seven malocclusal positions as taught by Dr. Angle are:

1. Mesial.
2. Distal.
3. Lingual.
4. Buccal.
5. Infra.
6. Supra.
7. Torsal.

A tooth may also occupy any possible combination of these malocclusal positions.

Any tooth occupying any of the above-mentioned malpositions must be in malocclusion with its antagonists and consequently bring into malocclusion all teeth of both arches depending upon it for position; hence the classification of malocclusion as taught by Dr. Angle:

Class 1.—Arches in normal mesio-distal relations.

Class 2.—Lower arch distal to normal in its relation to the upper arch.

Division 1.—Bilaterally distal, protruding upper incisors. Usually mouth breathers.

Subdivision.—Unilaterally distal, protruding upper incisors. Usually mouth breathers.

Division 2.—Bilaterally distal, retruding upper incisors. Normal breathers.

Subdivision.—Unilaterally distal, retruding upper incisors. Normal breathers.

Class 3.—Lower arch mesial to normal in its relation to upper arch.

Division.—Bilaterally mesial.

Subdivision.—Unilaterally mesial.

The word "eruption" used in the description of numbers 1 and 2 of Dr. Goddard's arrangement is applicable only to a part of the class the author desires to describe, for it does not apply to that large number of teeth forced into lingual or labial position after having fully erupted.

Numbers 3, 4, 5 and 6 convey the desired meaning.

No. 7 implies lingual or labial positions, hence should be classed with numbers 1 and 2.

No stronger evidence can be adduced for the great need of a distinctive nomenclature for orthodontia than the words employed by Dr. Goddard in the naming of classes 8 to 15. After describing on pages 685 and 686 *his* classification of malocclusion based upon the position of the second lower bicuspid, his lack of adherence to this classification displayed at this crisis must be construed as a failure to comprehend the importance of occlusion. Why should he not adhere to the terms "distal and mesial occlusion" in preference to "upper and lower protrusion?" The term

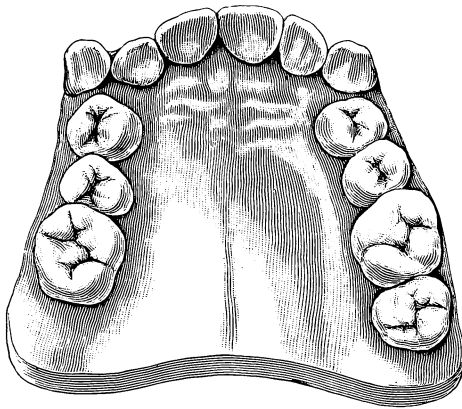


Fig. 1. (Goddard's 723.)

"V-shaped arch" and the names of all the other classes tell us nothing definite, while the mention of a class of malocclusion (according to Angle) conveys positively the location of an abnormal relation of the arches and consequently suggests clearly and distinctly a principle of procedure for establishing harmony. This lack of fundamental principle is characteristic of every method described in this chapter. Dr. Goddard did not even mention occlusion in connection with the name of the man who, by publishing his recognition of occlusion and malocclusion, founded modern orthodontia. For reasons, known only to himself, the author has contented himself by referring only to methods (many of these having been discarded) employed by Dr. Angle during the evolution of his present teachings, an injustice, not only to one man, but to all men interested in the speedy promulgation of scientific truth.



In his description of "*Class 15. Separation in the Median Line*," Dr. Goddard, by his silence in regard to Dr. Angle's article in the Nov., 1899, *Dental Cosmos* keeps the students of his chapter in ignorance of the cause and only remedy for this abnormal condition.

The acknowledged interdependence, for position, of the teeth of both arches dispels all possible doubt as to the existence of compensating malpositions of teeth in corresponding arches. Again, the author has seen fit to ignore this indisputable fact. Examples of this oversight in the chapter under discussion are too numerous to permit repetition. I shall, therefore, offer as evidence of my assertion only one fair sample. Fig. 1 (which in Dr. Goddard's chapter appears as Fig. 723) speaks for itself. Can any one conceive of such a malposition in the upper arch without a corresponding abnormality in the lower arch? Some tooth, usually a bicuspid, must be in lingual or labial occlusion because the anterior teeth



Fig. 2.—Right Occlusion.



Fig. 2.—Left Occlusion.

of the lower arch have been moved distally by the malposed anterior teeth of the upper arch. Since, however, the author failed to recognize the malposition of the superior incisors and bicuspid, he cannot be censured for overlooking a malposition in the lower arch.

Fig. 2 shows a like case treated according to the precepts of modern orthodontia. In this case the superior incisors and first right bicuspid were moved to occupy their proper position in the occlusal line. This produced the exact space allotted by nature to the right superior cuspid. The right lateral, cuspid and first bicuspid of the lower arch were moved into their ideal positions, thus bringing about the space allotted the second bicuspid of the same side. In other words, this case belongs to "class 1" (Angle). The teeth of each arch were moved into their correct relation



Fig. 2.—Lower.

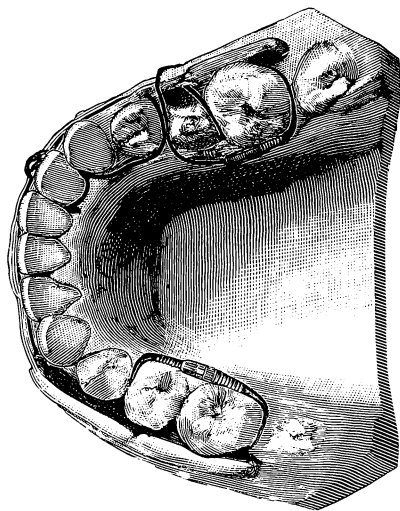


Fig. 2.—Lower. (Study Model.)



Fig. 2.—Upper.

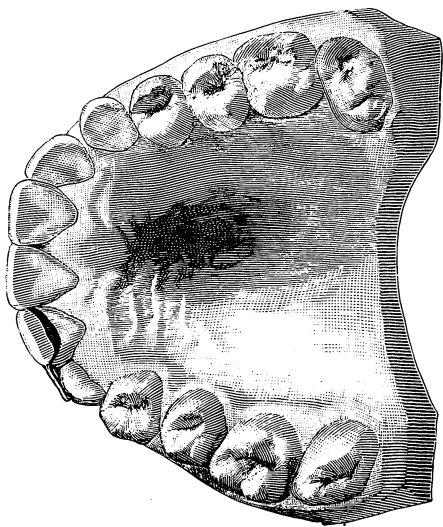


Fig. 2.—Upper. (Study Model.)

with its line of occlusion. This being accomplished, there was then perfect harmony of the two dental arches and perfect occlusion.

In treating a case as Fig. 2 was treated, we not alone insure permanent retention, but we also restore the normal facial lines, because we restore harmony in the sizes of the arches.

After considering Dr. Goddard's treatment of the labially occluding cuspid in conjunction with the statement (found on page 700) that "when the occlusion is already normal and the irregularity is slight, but cannot be reduced without seriously deranging one or both sides of the mouth, it may be best to permit the irregularity to remain as the lesser of two evils," we become convinced that the author has but a vague idea

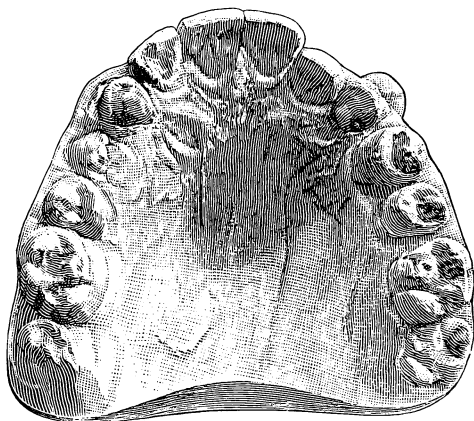


Fig. 3. (Goddard's 608.)

of occlusion, for there can be no "irregularity" without a malocclusion nor a normal occlusion with an "irregularity."

**Value of  
Perfect  
Models.**

Nothing will lend greater aid to the study of occlusion and malocclusion than will accurate models obtainable only from the most carefully taken plaster of paris impression. These *accurate models* being of such indispensable diagnostic value, we read

with amazement on pages 710 and 711:

"Modeling compound is best adapted for impressions of most cases. Special cases may need the more absolute accuracy of plaster of paris, but such cases are rare."

Why this fear and dread of accurate workmanship? There can be no logical reason for the discouragement of accuracy. We are all fa-

miliar with the cry that time is too valuable for the "busy practitioner" to employ it to obtain accurate models. I answer this by stating that "anything that is worth doing at all is worth doing well," and being so done a commensurate compensation will be forthcoming. Aside from the failure of models made from modeling compound impressions to fulfill the

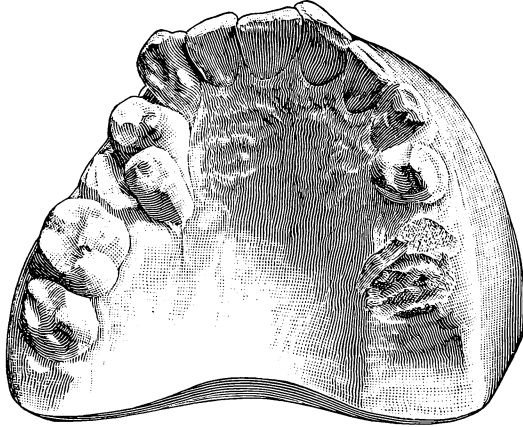


Fig. 4. (Goddard's 609.)

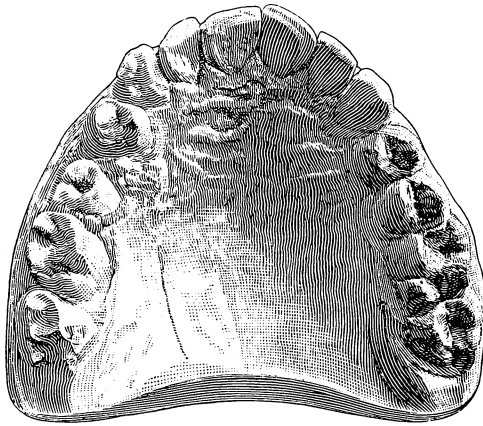


Fig. 5. (Goddard's 610.)

purpose for which they are intended they encourage carelessness and slovenliness, two attributes which are in need of no encouragement.

Figures 608, 609 and 610 (Figs. 3, 4 and 5) are fair samples of the result of modeling compound impressions. After deducting the improvements made by the engraver's pencil, the result will be a model unfit to

expose to the critical eye of a camera. Such models bear teeth distorted to such an extent as to render a study of occlusion impossible.

The necessity of obtaining perfect models for any and all purposes cannot be emphasized sufficiently. Not only does orthodontia require perfect models, but prosthodontia is equally justified in demanding accurate models. If like care and skill were expended in obtaining models of anomalies, half-tones could be used in illustrating, "for nothing is better than a half-tone from a perfect model, and nothing worse than the result of the same process from imperfect models."

Lastly I desire to take issue against the suggestion and publication of appliances which never have and never will accomplish the work for which they were designed. This chapter abounds in such pictures. The

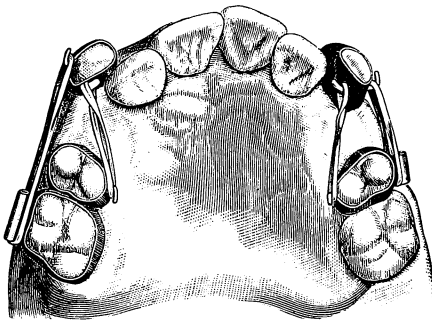


Fig. 6. (Goddard's 725.)

vast majority of these appliances are fanciful pen sketches of impractical devices. Time and space forbid a rehearsal of all appliances of this kind illustrated in Dr. Goddard's chapter. I shall therefore present for your consideration but a few selected at random.

Fig. 664 shows an appliance whose object is to move distally the bicuspid and the incisors toward the left.

As a retainer this appliance has no superior, but as an appliance for moving teeth it is a most decided failure.

Fig. 725 shows an attempt to move a cuspid distally by means of rubber bands, using the second bicuspid for anchorage, while the first bicuspid has been extracted to create room for the cuspid (Fig. 6). First of all, instead of the cuspid moving into the desired position, the bicuspid will be moved mesially. The author, as yet, not having become impressed with the necessity of obtaining, studying and exhibiting occluded models renders his recommendation of removing the first bicuspids questionable.

and at the same time keeps the student of this chapter in ignorance of his reasons for extracting. However, I venture to say that extraction in this case was contra-indicated. Furthermore, such an abnormal position of the teeth of the upper arch without a compensating malposition of the teeth of the lower arch does not exist, and unless the malpositions of the teeth of both arches be corrected, thereby establishing harmony in the sizes of the arches, failure must be the result.

Fig. 759 shows an appliance intended to retract the six anterior teeth after the first bicuspid have been extracted (Fig. 7). The anchor bands are placed on the first molars, the "labial bow" is applied and we are told, by turning the nut placed at the distal end of the tube on the anchor band

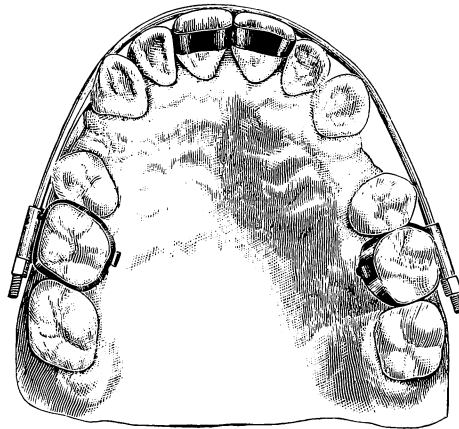


Fig. 7. (Goddard's 759.)

the six anterior teeth are drawn back till the cuspids occupy the vacant spaces. Even if the second bicuspid, and the first and second molars were used for anchorage, the desired movement could not be accomplished, consequently an anchorage of only one tooth on each side must bring about a more disastrous result. Aided by the inherent tendency of all teeth to move forward, this appliance will cause the spaces to be filled by moving the second bicuspid and the molars forward, thus producing a more serious abnormality than the original.

These are fair samples of the methods and appliances suggested in Dr. Goddard's chapter. In concluding my criticism of this subject I desire to express the sincere hope that the time has arrived when "compilers of methods of others" will prove their sincere interest in those seeking their compilations as sources of knowledge by eliminating from books such methods as "Immediate Regulating" promulgated by Dr. C. L. Bryan and Dr. Geo. Cunningham.

A retrospect of this criticism brings to mind the defective nomenclature heretofore so freely indulged by writers. Perhaps the most misleading of all is the term "irregularity of teeth." This term merely implies an abnormality, which may manifest itself in the form, size, color, structure, number or position and occlusion of teeth. The terms malposition, malocclusal position and malocclusion have reference to distinct and definite abnormalities. Another decided improvement is found in the naming of the seven malocclusal positions. Had the author of the chapter under consideration been more familiar with nomenclature of modern orthodontia, he would have refrained from stating that no general description can be given to malocclusion, while on another page he arranged, for sake of convenience, irregularities into fifteen classes; nor would he write that "when the occlusion is already normal and the irregularity is slight, etc."

"I think most of the gentlemen feel as I do about this regulating business. It gives them a cold chill to have anything to do with it." This was the characteristic utterance of a dentist during the discussion of a paper on orthodontia read before a state society. A cold chill—with fatal result—no doubt is the only logical consequence of imbibing knowledge from writings such as I have reviewed. However, *modern orthodontia* bears a message of incontestable facts and hopeful encouragement to all weary and dejected.

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## **The Ground-Work of Orthodontia Essential to the General Practitioner.**

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By WM. ERNEST WALKER, D.D.S., M.D., Pass Christian, Miss.

*Read before the American Society of Orthodontists at St. Louis, Mo., June 11, 1901.*

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Lest from the title of my paper it might be inferred that an argument against specialism is intended, and someone be misled, I will say at once that such is not my purpose. On the contrary, there is too abundant evidence that the marvelous progress made in the various departments of medicine, including that branch pertaining to the mouth, has been due to no cause more absolutely than to specialization, but even then the greatest and most positive progress has followed specialization, only when preceded by the most thorough preparation in the ground-work; in other words, thorough early training in the fundamental principles on which all superstructure, in the form of higher education and specialization must depend for its only secure foundation.

While this preliminary building of the foundation is an important part in the make-up of the level-headed specialist—one who takes all

things into consideration instead of giving his thoughts merely to the accomplishment of the single present object, without due consideration of the entire constitution and life of the individual, it is of equal importance that the general practitioner should be familiar with the ground-work of *all* specialities. Nothing short of this will enable him to deal the most successfully with the greatest of all his functions, *prophylaxis*.

This is true of all the specialties of medicine on the one hand, and to general medicine and surgery on the other, as well as to the larger specialties which may with profit be further subdivided into more definite specialties; and here we class the general practice of dentistry which seems suitable for subdivision into more defined specialties—notably orthodontia. It cannot be denied but that there is much in orthodontia which adapts it to be practiced as a specialty, and one worthy of the entire attention of one free from the cares and duties of general practice.

Not that the general practitioner should know less of orthodontia, but that the specialist should know more of orthodontia and facial orthopedia. The general practitioner in dentistry should not only *not* know less of orthodontia than at present, but he should know *more* of the *ground-work*; have a better understanding of the underlying principles of prophylaxis; of the physiology of tooth-movement and retention; a more thorough knowledge of anatomy, macroscopic and microscopic, and better appreciation of facial form and expression; and last, but not least, be better able to diagnose abnormalities and their character.

To this end *classification* plays an important part. Classification has received entirely too little attention at the hands both of the general practitioner and the orthodontist, if we may judge from the literature upon the subject. I am fully persuaded that many blunders might be avoided if we had always in mind a good working classification, enabling us to correctly classify each case before undertaking correction.

I have not found in our literature any classification that is *entirely* satisfactory to me, and therefore venture on this occasion to offer an amplification of "Angle's classification."

Although a little more elaborate, to my mind it is sufficiently more comprehensive and practically useful to abundantly compensate for its cumbrous character. That I may not be accused of taking credit for that which is not original, I will first reproduce Angle's classification and then my modification (or amplification) of it.

Class I.—Arches in normal mesio-distal relations.

Class II.—Lower arch distal to normal in its relation to upper arch.

Division 1.—Bilaterally distal, protruding upper incisors, usually mouth breathers.



*Subdivision.*—Unilaterally distal, protruding upper incisors, usually mouth breathers.

Division 2.—Bilaterally distal, retruding upper incisors. Normal breathers.

*Subdivision.*—Unilaterally distal, retruding upper incisors. Normal breathers.

Class III.—Lower arch mesial to normal in its relation to upper arch.

Division.—Bilaterally mesial.

*Subdivision.*—Unilaterally mesial.

Dr. Angle's classification is well worthy of our acceptance as a *foundation*, but as a finality, it is to me deficient, in that it fails to provide for a distinction between cases in which the upper teeth are mesial of their proper position, and cases in which the lower teeth are distal of their proper position.

These cases are all brought under Dr. Angle's Class II, where we find them in two divisions according as to whether the upper incisors protrude or retrude, each division having a subdivision according as to whether the malocclusion is unilateral or bilateral. Class II. is described as including all cases in which the "Lower arch is distal to normal in its relation to the upper arch."

It is to my mind apparent that there should be a distinction between those cases in which the defect is really in the lower arch, as distinguished from those in which the defect exists in the upper arch. For instance, we may have two cases, both arranged in Class II, because the lower arch bears a distal relation to the upper, yet they may still be very different from one another, for in one case, the upper arch may be in its normal position in relation to the rest of the face, still the lower arch be distal in relation to the physiognomy as well as in relation to the upper arch; while in the other case, although the relation of the lower to the upper is the same, it in reality requires a different heading because here the lower arch bears a normal relation to the rest of the cranium and face, the defect really being in the upper arch, which is mesial not only in its relation to the lower arch, but also in its relation to the physiognomy. To treat the two cases alike would be a very grievous error.

The first is a sub-inferior labial case, and the lower arch needs to be advanced (by jumping the bite probably unless that would give too much chin). The other case is pro-superior labial, and it would be a fatal mistake to harmonize the arch by advancing the lower, the remedy being to retract the superior arch. This should be classed as superior-mesial-occlusion; the other as inferior-distal-occlusion. There would, of course, be a further subdivision in each case, if only unilateral. The same distinction would be made in Class III, where the lower arch is mesial to normal

in its relation to the upper arch, it may nevertheless from the facial point of view be in normal position, the defect being in the upper arch, which in this case would bear a distal relation not only to the lower arch, but to the face itself.

Upon this basis we would have the following

### **Classification of Maxillary Orthopedics.\***

Class I.—Arches in mesio-distal relation, normal; *anterior* teeth malposed.

Class II.—Lower arch distal to normal in its relation to upper arch.

Subclass I.—Lower arch retruded in its relation to the physiognomy.

Division I.—Bilaterally distal, protruding upper incisors; usually mouth breathers.

*Subdivision.*—Unilaterally distal, protruding upper incisors; usually mouth breathers.

Division II.—Bilaterally distal, retruding upper incisors; normal breathers.

*Subdivision.*—Unilaterally distal, retruding upper incisors; normal breathers.

Subclass II.—Upper arch protruded in its relation to the physiognomy.

(Divisions and subdivisions same as in subclass I of Class II.)

Class III.—Lower arch mesial to normal in its relation to upper arch.

Subclass I.—Lower arch protruded in its relation to the physiognomy.

Division.—Bilaterally mesial.

*Subdivision.*—Unilaterally mesial.

Subclass II.—Upper arch retruded in its relation to the physiognomy.

(Division and subdivision same as in Subclass I of Class III.)

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## **The Power of Specialization.**

By L. W. BEARDSLEY, M.D., St. Louis, Mo.

*Read before the American Society of Orthodontists at St. Louis, Mo., June 12, 1901.*

It is impossible in a paper of this kind to give aught but a rather cursory review of the subject, inasmuch as it is to be considered in a general manner, and must of necessity, therefore, because of that very generality, lack that thoroughness which might otherwise obtain. Furthermore, it will be possible only to go into rather an abbreviated and strictly abstract discussion of our subject, for I am sure, if you will ponder for but

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\*This proposed classification was not adopted by the Society.

a moment, you will realize the impossibility of a concrete consideration, without compiling a complete chronology of all discoveries and inventions, barring those of accidental origin, which the world has seen; for have they not been the results of specialized effort, or of especial talent or fitness, in the line of the accomplishments?

Specialization is not of recent origin, despite the contentions of those who maintain the contrary, but has existed since the world was in its swaddling clothes. What is the tiller of the soil but a specialist, or what the huntsman? What the carpenter, the shoemaker, the tailor, the mason, the butcher, the baker, or candle stick maker? Are not their energies directed, either because of inherent ability or as the result of education, along constricted or special lines? If a carpenter demonstrates by his work that he is more than an ordinary craftsman, and is assigned to the task of putting the finer finishing touches to a piece of carpentry, may we deny that here is a specialty within a specialty? For fear of a misunderstanding of my argument, and in order to present to you in possibly a clearer manner the thoughts that I wish to convey, let us see what the dictionaries contain upon the subject.

In studying the lexicography of "power," one  
**Power.** finds varied and sundry applications of the term.

For instance, "power" is used to denote "the ability to act, regarded as latent or inherent," or the "faculty of doing or performing something," or "the capability of producing an effect, whether physical or moral." Another group of definitions contains: "ability, regarded as put forth or exerted," and "strength, force or energy in action—for example, the power of steam in moving an engine, or the power of truth or argument, in producing conviction." A third group says it is the "capacity of undergoing or suffering," and the "fitness to be acted upon." And, too, we have "power" defined as "the employment of strength, the exercise of a faculty, any agency, moving force of anything, energy, rule, authority," and many others besides. In Webster's International Dictionary, Sir William Hamilton is quoted as saying, "Power, then, is active and passive; faculty is active power, or capacity; capacity is passive power." When we come down to the specialized meanings of "power," we find, mathematically speaking, that it is "the product arising from the multiplication of a number into itself; as, a square is the second power, a cube the third power of a number." From a metaphysical standpoint we are admonished that "power is the mental or moral ability to act, or think, or reason, or judge, or fear, or hope, or will." In optics it applies to "the degree of magnification possessed by a lens, mirror, or any optical instrument, and usually denotes the number of times it multiplies, or augments, the apparent diameter of an object."

There are other specialized definitions of the word "power," but they are more or less irrelevant to the thoughts I wish to impress, so for the sake of brevity, I shall not repeat them, but proceed to what is commonly understood as specialization.

We find that the term is a derivate from *species*,  
**Specialization.** which, logically, means "a group of individuals agreeing in common attributes, and designated by a common name; a conception subordinated to another conception, called a genus or generic conception, from which it differs in containing or comprehending more attributes and extending to fewer individuals." Thus man is a species, under animal as a genus; and man, in its turn, may be regarded as a genus, with respect to European, American, or the like, as species." We find, too, that special is defined as "limited in range; confined to a definite field of action, investigation or discussion; as, a special branch of study." Naturally, then, specialism or specialization, is the devotion of energy to a particular and restricted part or branch of art, knowledge or science.

You will wonder, perhaps, why I have gone such lengths into the lexicography of the terms used in the title of this paper, but it has been for a reason, and it is this: I wish to impress quite definitely the difference in meaning of specialization and generalization. To generalize is to "infer from one or a few, the nature of a whole class," or let us say rather, a generalization is a deduction made, or a conclusion drawn, from the survey of a group or genus as a whole, and perhaps you will allow a repetition of the illustration previously used, "that man is a species, under animal as a *genus*; and man, in its turn, may be regarded as a genus, with respect to European, American, etc., as species.

If we consider critically the definitional antithesis of the words generalization and specialization and give to both a common attribute, power, we must of necessity use the term as a measure or rather an index of relative value. And if we say that this relative term denotes the ability, or better, the capability for the achievement of results, or the attainment of an end, we can, inversely, say that the result achieved is an index or measure of the amount of power. Therefore, that both generalization and specialization possess power, is proven by the demonstrable results of its application. That these results vary in kind and scope is an equally provable fact, else further argument would be rendered impossible, and it is with this variation of results that we have to do. As stated before, we shall consider power as an attribute of generalization and specialization, in a relative sense, and endeavor to show the reason of an increase or decrease of potency in the one case or the other.

**Force.**

In comparing the relative value of any two things, it is a much easier task if there be a fixed and definite entity which we can use as a standard. But in the consideration of so abstract a matter as the one in hand, we are handicapped because of the lack of such a standard, and the time and space for a voyage upon the limitless sea of concrete facts is unavailable. Such being the case, we must depend for our argument upon the analogous application of well-grounded, fundamental principles of general science, presupposing, on your part, a knowledge of concrete results when used in a particular direction. By way of preliminary explanation, the terms force and power will be used in a more or less synonymous manner. In Physics we are taught that "two masses are said to be equal when the same force, acting upon them separately, will produce in them equal accelerations." Again, "the rate of acceleration by the same force is less as the mass moved is greater." Forces are said to be equal when they can produce equal accelerations upon the same or equal bodies, and by comparison we are furnished a simple and accurate method of measuring forces, by balancing the forces to be measured against the weight of known masses. To produce in a given mass a given acceleration, the force must be proportional to the product of the mass into the acceleration.

Newton's second law of motion, "change of motion is proportional to the impressed force, and takes place in the direction of the straight line in which the force acts," let us remember especially, for it is the universal and unalterable experience in regard to the direction and amount of effect of forces. If we presume a definite force or power acting upon a definite mass, the rate of acceleration resultant therefrom will be definitely proportional. If, now, we divide the mass, but still employ the same equivalent of power, we necessarily increase the rate of acceleration. Another subdivision, and a proportionate increase in the rate of acceleration, and, of course, the further we subdivide the mass, still employing, however, the same quantity of power, the greater will be the rate of acceleration. Now, however, to what conclusion can we come when, instead of a known unit of power, we have an indefinite quantity to measure; how shall we proceed? Naturally enough by the determination of its action upon a given mass, with regard to the acceleration. We know that by balancing forces against the weight of known masses, we can measure those forces by the rate of acceleration, which will be greater or lesser in degree proportionate to the size or weight of the mass acted upon.

**Psychical Application  
of  
Physical Laws.**

It is remarkably true that we can apply general physical laws in manifold directions; a slight change as to nomenclature fits them for anyone's use, and the clearness of their logic makes them almost self-explanatory. In the present instance, let us substitute knowledge for mass, study for power, and attainment for acceleration. Surely then, attainment is resultant from the application of study to knowledge, and the rate of attainment will depend both upon the amount of study, and the bulk or mass of knowledge. Just as the mass of knowledge grows larger, so must our thoroughness decrease, if we direct our studies in a general way. But divide the mass of knowledge into gross divisions, and then divide and re-divide these, and, directing our power of study toward one of these subdivisions, does it not inevitably follow that our rate of acceleration, or our thoroughness of achievement, must proportionately increase? Because it is true, and because in "the struggle for existence" there is only "the survival of the fittest," have we been forced nowadays more than ever before, to devote our energies along constricted lines, for in doing so we acknowledge and take advantage of, the power of specialization.

Time was, perhaps, when an individual intellect could obtain mastery over, what then was, the known, but surely it was in the long-ago. I do not believe that the race is degenerating, either. The standard of mentality is higher today than ever before, and with our ever-increasing facilities for obtaining and imparting knowledge, despite what the pessimists say, I fail to see anything but progress for the future. Education! there's the keynote! Education in its broadest sense, as a means of fitting us to do the greatest good to our fellow-man. Not the old method of learning by rote, but the new, that appeals not so much to memory, but to reason. Not the telling to us the answer, but teaching to us the natural method of experimental investigation, whereby we can arrive at a conclusion by reason of our knowing the *how* and the *why*.

Fitch, in his "Lectures on Teaching," remarks that "a school is a very unsatisfactory institution, and fails to fulfill its highest function, if, however it may succeed in imparting knowledge, it does not also succeed in imparting a thirst for more." Sir Michael Foster, in a recent article on "The Scientific Use of Hospitals," maintains that "every touch of the surgeon, every counsel of the physician, is more or less of an experiment, for neither the one nor the other can be absolutely sure of the result of his act; while on the other hand, he is prepared to make use of the knowledge afforded by the result. . . . Were such experiments conducted, not for the welfare of the patient, but simply for the advancement of knowledge, there would be justification for the attitude just mentioned."

This, it seems to me, would be an ultra-radical utterance, were it not tempered by the justification of the means by the end ; that is to say, whilst one may suffer, the multitude shall benefit thereby. That the world recognizes the value of experimental investigation along all lines of scientific thought, is evidenced by the immense increase in laboratory facilities in the progressive educational institutions and in private. The laboratory of today is not the same as the one of yesterday, for we have been accustomed to think of it as being fitted out for demonstrational purposes chiefly. Now, however, it serves a broader field, in that the equipment also comprises the necessities for investigation, as well as for teaching. To again quote from Foster's article, "The duties of the head of every scientific laboratory and of his chief assistants should be three-fold ; first : To teach beginners what is known ; second : To carry on personal research into the unknown ; and, to train those who are no longer beginners the way of inquiring after the truth." And are we not all seekers after the truth ? No man can know all of science, and all men can know some of science, and, as Fitch says, "That study is best for each of us which calls out the largest amount of spontaneous exertion, and in which we are not recipients merely, however diligent, but willing agents." Knowing as we do, what a great, unbound volume science is, and realizing fully, I hope, that "what is worth doing, is worth doing well," is worthy of our supreme effort, and believing with a firm and steadfast belief that thoroughness is only achieved through concentration of purpose upon a constricted field of application, perhaps you will join hands with those brethren of all times and ages who, realizing the infinity of knowledge and the very finite nature of man's capability for effort, did not attempt to learn something of everything, but, by making use of *the power of specialization*, learned *one* truth, but that truth well.

To those narrow-minded souls who do not believe with us Philistines that "Art is the expression of man's joy in his work," and who say that specialization is a degenerate tendency, I can only say that their cult has existed since all time ; "'tis nothing new." We do not feel hurt because of them, but do feel a great load of sorrow for them, that they should so stand in their own light. Their arguments, if such we may call them, have the faculty of tickling the ear, but not moving the soul ; to such as fall an easy victim to an oily tongue, they are as sweetest music, but to the discerning ones are but as the chaff around the kernel. Indeed, long ago, in his letter of criticism upon the pseudo-philosophy of Lord Bolingbroke's writings, Edmund Burke has said, "It is an observation which I think Isocrates makes in one of his orations against the sophists, that it is far more easy to maintain a wrong cause, and to support paradoxical opinions to the satisfaction of a common auditory, than to establish a

doubtful truth by solid and conclusive arguments. When men find that something can be said in favor of what, on the very proposal, they have thought utterly indefensible, they grow doubtful of their own reason; they are thrown into a sort of pleasing surprise; they run along with the speaker, charmed and captivated to find such a plentiful harvest of reasoning, where all seemed barren and unpromising. This is the fairy-land of philosophy. And it very frequently happens that those pleasing impressions on the imagination subsist and produce their effect, even after the understanding has been satisfied of their unsubstantial nature. There is a sort of gloss upon ingenious falsehoods that dazzles the imagination, but which neither belongs to, nor becomes the sober aspect of truth. There is an air of plausibility which accompanies vulgar reasonings and notions, taken from the beaten circle of ordinary experience, that is admirably suited to the narrow capacities of some, and to the laziness of others. But this advantage is in a great measure lost, when a painful, comprehensive survey of a very complicated matter, and which requires a great variety of considerations, is to be made; when we must seek in a profound subject, not only for arguments, but for new materials of argument; their measures and their method of arrangement; when we must go out of the sphere of our ordinary ideas, and when we can never walk surely, but by being sensible of our blindness. And this we must do, or we do nothing, whenever we examine the result of a reason which is not our own."

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### **The Arch.**

By GRAFTON MUNROE, D.D.S., Springfield, Ill.

*Read before the American Society of Orthodontists at St. Louis, Mo., June 12, 1901.*

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For architectural beauty and grace, the mechanic has found in the arch no equal. For, since the day when the Great Builder of the Universe placed His bow in the heavens, man, whatever his inclinations, has had the arch to mark his efforts in the construction of typical buildings and bridges, or the consummation of his efforts in triumphal arches from the days of old Roman heroes, down to those of New York and Dewey.

The human mouth is built as a vault spanned by an arch, and when in repose, two concentric arches carry the teeth, which, when in proper occlusion, do the best work in rendering mastication of the food most perfect. Built after nature's own plan, why should we not find in the regulating arch the most appropriate form for adjusting irregular teeth? The history of the arch dates back to 1726, when



Fauchard, of France, gave us, by the introduction of this device, a life toward that form of appliance distinguished by simplicity—efficiency, ingenuity, and other requisites which mark completeness—found in what is familiarly known to us as the Angle regulating arch.

Most operative dentists are acquainted with the beginnings of what, for a number of years, was so useful in the condensation of gold in the filling of teeth—the Bonwill electric mallet. The enormity of size and comparative unwieldiness of this latter instrument are brought before the essayist's mind when he contemplates the next addition to the arch suggested by Fox, nearly a century later in 1803—consisting principally of the gag, in form of blocks of ivory to prevent the closure of the jaws and interference from moving teeth. The next step was not marked by any particular improvement in the arch, but rather a slight advance, in the attachment of the arch by clamp bands, affording better anchorage, and was given to devotees of orthodontia by Schange in 1840. It consisted of a ribbon of metal nearly encircling the crown of the tooth—the ends bent at right angles—then thickened and perforated—one threaded, the other smooth; a threaded shaft was made to engage the ends, and by turning the shaft, the band was drawn tighter on the tooth.

To Schange also belongs the credit of the introduction of the screw, in regulating appliances, though the honor has sometimes been claimed by Dwinelle, of New York, and Gaines, of England. In 1850, Harris offered some changes in the attachments for the arch. Metal-swaged caps adjusted to molars as abutments for the arch to which it was soldered, and which were kept in place by a plate over the vault, the crowns being soldered to the plate, constituted his ungainly appliance, for it had to be removed for cleansing, and hence lost the requisite quality of fixed anchorage.

When we take into consideration the various forms and deviations from the ideal arch as directed by the Angle System and classification of malocclusion, and contemplate Farrar's elaborate appliances, Patrick's ingenious designs, Byrne's Band Regulators, Jackson's Cribs, Matteson's Crowns, Coffin's Spring Plates, Talbot's Coiled Springs, we are in each reminded of the necessity for closer approach to simplicity.

While most of these appliances may have had a degree of efficiency, yet the elaborateness of design and want of application by systematic classification with a view to the great laws of occlusion, have rendered them only more perplexing to others than to their respective inventors. The method of inventing appliances for each case has given a field for the exercise of individual ingenuity, and even

the Case method uses the operator's time in making screws and taps, and in producing appliances that are far from being marked by simplicity, though perhaps in his hands not inefficient. For, says Dr. Case, in a paper before the Illinois State Dental Society, in 1898, "Because of the need of individual direction in the workings of his own appliances, many of these appliances which he has invented and of which he has described the action, to the minutest detail, describing and presenting models of case after case, where they have performed marvelous results in his own practice, have not met with similar results in the hands of others."

As late as the year 1887, Dr. N. W. Kingsley is reported as having said in reply to the query, "What kind of a fixture do you use *now* for regulating teeth?" "I cannot regulate teeth with any one fixture. Some variation of an old appliance must be invented for almost every case. I once started out with the idea—it seems idiotic as I think of it now—that I could publish descriptions of a sufficient number of cases to cover the whole ground of regulating, enabling anyone who came after me to hunt up the particular case that met his need, and find the treatment fully described. But the more I went into it, the more hopeless the task became. It is simply impossible."

With these words of Dr. Kingsley before us, it is no wonder that we heard so little of failures, for each inventive genius could direct his own impractical theories and machinery, placing no dependence in the laws of occlusion and the classification of malocclusion. Thus Farrar, with his complicated network of springs and pulleys had no failures; Talbot, with piano wire, was equally successful; Jackson, with his cribs and split plates, accomplished wonders. All of these earlier workers in orthodontia paid but little heed to the importance of fixed anchorage. It was the genius of the man after whom the plain band was called, that gave us that addition to the arch, which has made the name Magill honored and cherished.

Dr. Magill, of Erie, Pennsylvania, in 1871 or  
**Anchor** '72, first commenced attaching the plain bands by  
**Bands.** means of cement, thus obtaining an important  
 step in the laws governing the correction of irregular  
 teeth—namely, fixedness of anchorage.

Believing that scarcely any one here is not acquainted with the making of these bands, I will simply state that they were originally made of platinum or gold of No. 32 or 36 gauge, and, after soldering, were fitted to the tooth; after trimming, were readjusted with cement for the purpose of stationary anchorage for the arch. To Dr. Edward

H. Angle belongs the honor of the introduction of German silver for these bands, and with this metal of the proper thickness, the banding of teeth becomes a task so simple, compared with the original method, that the appliance deserves the name Angle-Magill band.

As the days of "Tinker Regulating" are fast passing into history not to be repeated, and we are living in the time of methods which recognize the practicability of fixed and standard forms of devices, these forms having been arrived at by careful experimentation and close observation in a very large number of cases, covering almost every possible variety of malocclusion, we can appreciate the words of Dr. Farrar, Volume XX, *Dental Cosmos*, when he predicted the possibility of this plan, as follows:

"It has for some time been evident to me—though by most people thought to be impracticable—that the time will come when the regulating process and the necessary apparatus will be so systematized and simplified, that the latter will actually be kept in stock in parts and wholes at dental depots, in readiness for the profession at large, so that it may be ordered by catalogued numbers to suit the needs of the case; so that by a few moments' work at the blow-pipe in the laboratory the dentist may be able, by uniting the parts, to produce any apparatus, of any size, at a minimum cost of time and money."

Thus far it has not been the desire of your essayist to weary you with the details of a text-book description of individual methods, but it seems that all the more prominent plans of regulating have employed as the next most important adjunct to the band as abutment for the arch, that all-powerful agent, the screw, and the distinctive application of the screw in the form of attaching it to bands by means of pipes, is a just claim of our worthy confrere, Dr. E. H. Angle.

When our attention is fixed on the requisites which a regulating appliance should possess, namely, efficiency, simplicity, delicacy, yet power, inconspicuousness and stability of attachment, and then consider the arch with its adjuncts, as advised in the Angle system of regulating, is it not reasonable to say that we have in it the nearest approach to the demand for one that is of universal application?

Let us then divert our attention to a few, at least, of those forms of the *arch* which may be considered as leading up to the system just named.

Labial bows extending along the buccal or  
**Labial Bows.**      labial surfaces of the teeth are among the oldest  
                                 appliances for attachment of ligatures or rubber  
bands for moving teeth. The ends of the bow have been fastened in

various ways—by ligatures, by imbedding in a plate, by soldering to bands or cribs, or by insertion in tubes soldered to bands or vulcanized into plates. The bow was, and is made of a flat strip of plate, or of round or half-round wire. Dr. Kingsley used round wire attached to vulcanite plates; he also records in his work a case where expansion of the entire arch was accomplished by rubber wedges; imagine the sensation in the act of mastication and the dangers accruing because of the wedges slipping against the gum festoons.

Dr. Bonwill describes two flat bars of platinized gold sliding over each other for at least two inches, and a rubber band fastened to the end of the bar by contracting acts as an expanding agent. The attachment of these bands are made on either side to a bicuspid or molar, as the case permits.

Dr. Byrne's method is described as being dependent upon the power derived from elasticity or corrugated metal bands, formed into a spring or series of springs, so adjusted as to bear most powerfully upon the misplaced tooth or teeth. These bands are made from gold plate 20 to 22k. fine, rolled thin, and when greater power is desired, used double.

Slightly earlier than the above, Dr. Patrick, in 1882, introduced his method of regulating, not requiring any preliminary study of models, not even taking impressions of the case. The appliances were well made, but intricate, consisting of half round bar of platinized gold, adjustable anchor bands, and numerous devices for engaging with the teeth to be moved.

Comparatively so little use is now made of the vulcanite plates with Talbot springs, or the Coffin split plates, that a description seems almost a rehearsal of the obsolete. Suffice it to say, that they have served their office in leading up to something better.

Dr. L. P. Haskell, of Chicago, in the report of the Ninth International Medical Congress, Dental Section, says of the Angle System of Appliances: "They are so few and simple, so small and delicate, and withal so effective, especially as they dispense with rubber plates, that he wished every dentist could at least see them," and with these words as my incentive, placing in the background my own individual proclivities, I wish to give my further attention to this System of Regulating, especially the arch.

The arch, as referred to, is constructed of the  
**Angle's** metal known as German silver, which, since its  
**Arch.** introduction about fifteen years ago by Dr. Angle,  
 has nearly supplanted all other metals for the  
 manufacture of regulating appliances. It is a very elastic round bar

of about No. 16 gauge, bent to approximate in form to the outside of an ideal dental arch. Towards the ends on each side it is threaded and provided with friction sleeve nuts, these fitting in turn into the smooth bore tubes of anchor-clamp bands X or D. This constitutes what is known in this system as the arch E.

An arch of similar form and make, except that it is not threaded, but will fit in the clamp bands, sliding as the movements require, when its use is indicated, is known as arch B, and is provided with small collars, about midway the length of each side—for the attachment of rubber ligatures tied and stretched over the tubes of the anchor bands—thereby preventing the teeth from springing back from the positions gained while wearing the more powerful appliances of bar and head gear.

The bar "A," being used mainly in connection with arch "B," to which it is attached by a ball on arch "B" and socket receptacle on the bar "A," this latter appliance does not call for our special attention in a description of the arch.

**Wire  
Ligatures.**

Having endeavored to make plain the importance of the requisite of fixedness of anchorage, I can say that this system which has been chosen as our ideal, has that quality pre-eminent, the power obtained in the moving of the teeth is transmitted from the arch to the individual teeth by the use of wire ligatures—than which there is no more important adjunct in the correction of irregularities of the teeth.

Previous to 1895, ligatures consisted mainly of rubber or knitting or waxed floss silk.

The inventor of our ideal system had an eye for simplicity, cleanliness and strength, when in the year just mentioned he introduced the brass wire ligature, though he had used it and thereby had tested it for several years previously. The wire should be of No. 26 gauge, soft in temper, and of sufficient length to give good purchase when making the attachments by twisting.

Simple as this ideal arch for regulating is, in its make-up and principle, it has within its power the capabilities of wonderful expanding force, and not only expanding force, but by its aid a tooth may be moved, labially, buccally, lingually, rotated, elongated, and also even depressed and occasionally moved mesially or distally. The field for study of the application of force is wonderfully large, even though contained in so beautifully simple an appliance.

The use of spurs soldered to the arch with soft solder, and the use of the wire ligatures in securing the desired movement of the

teeth, are grandly unique, and call forth in their proper placing a degree of skill, in which the student of this line of work delights to engage.

The results of the wonderful application of force as transmitted through the use of the arch, are evidenced in the ingenious method evolved from the student mind of Dr. Baker, of Boston, who employed a novel method of exerting force for the reduction of protruding upper incisors, using as anchorage the teeth of the lower jaw and exerting force by means of heavy elastic ligatures, secured at one end to the collar always found on arch "B," and the other end drawn back and passed over the dental ends of tubes of bands "D" on the lower molars.

To use the word of the author, of the latest work on the treatment of malocclusion of the teeth, "the modifications of form and directions of spring, plus the modifications in ligature attachments, make it possible to derive wonderful combinations and results, and in its use it is possible to cultivate a very high degree of skill.

It typifies efficiency and simplicity. It is easily applied, and it is so stable in its attachments, that there need be no slipping or loss of power. It is cleanly, and occupies a position in the mouth that is of least inconvenience to the patient. In its proper use the widest range for reciprocal anchorage is possible. We may also gain simple and a considerable degree of stationary anchorage by reason of the tubes and firm attachments of the anchor band to the teeth used as anchorage."

A description of any of the more recent forms or systems of regulating, insofar as they profess to be new systems, would carry us back to the realms of tinker regulating, adjusting the numerous appliances to each individual case instead of relying upon the principle of that system which is based in its application upon the grand laws of occlusion and the classification of malocclusion set forth in the three great classes with their subdivisions.

Any system that claims to be absolutely without failures in the hands of all employing that system is apt to belong to those whose natures would be classed above those of mortals who err; but the system that has brought the arch into such prominence is just in its claim of being ideal.

In concluding, let me sum up some important reasons why this ideal system is rightly so called.

First.—It does away with plates covering the roof of the mouth.

Second.—It is based upon exact rules and principles.

Third.—Stationary anchorage is a foundation stone.

Fourth.—Being of simple construction, any careful patient can be cleanly.

Fifth.—Material of which it is constructed is not expensive.

Sixth.—Use of blowpipe makes any alteration for obtaining any desired position possible to the operator of mediocre ability.

Seventh.—It is not unsightly or cumbersome, and in its well directed use need cause but little pain.

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## Is Orthodontia Justly Represented by Its Teaching?

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By LLOYD S. LÓURIE, D.D.S., St. Louis, Mo.

*Read before the American Society of Orthodontists at St. Louis, Mo., June 12, 1901.*

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In times of prosperity there is often a tendency to be forgetful or careless of weaknesses. In fact, under the excitement due to success, there is frequently a feeling of enthusiastic satisfaction which resents even the suggestion of criticism. However, were it not for the critic, the remedy of defects would be much slower, and progress delayed accordingly.

Recently there has been a great increase of interest in Orthodontia, as is evident from the amount of discussion it occasions in dental societies and journals, and further by the development of college courses for teaching it. Now beneath all of this attention is there a true conception of the subject? There is certainly a recognition of its need, but is there an understanding of the extent and grandeur of the subject and of its marvelous possibilities, or is the present interest largely such as is caused by things mysterious or difficult to comprehend? We may get some idea of the matter by a consideration of common practice in this branch of dentistry.

The majority of dentists consider cases of malocclusion "good things to let alone" and handle them in that procrastinating way which advises delay of treatment, hoping that in the meantime something will occur to relieve them of the necessity of attempting correction. Patients are put off with these same old wise sayings, "Just let nature alone and she will improve matters," or, "Wait till the twelfth year when most of the teeth being erupted, a more intelligent decision can be made." Slight irregularities are not treated and the initial stages of complicated cases are

allowed to pass unnoticed. Then, much as it has been harped upon, "injudicious extraction" is still at its baneful work.

So much for a glance at the negative practices. The positive practices, or attempts at correction, are possibly more disastrous, for in more instances they work irreparable injury. A large proportion of effort in this line shows an utter ignorance or disregard of the principles of occlusion and consequently of the requirements of the case in hand. Temporary teeth are removed to make room for adjoining permanent ones. Permanent teeth are extracted and the patient assured that the resulting space will close nicely. Teeth in one arch are adjusted with no consideration of the opposing arch. The effect upon the facial lines seems generally to be a minor consideration or not thought of at all, unless there is a marked deformity, and shameful are the afflictions thereby imposed upon innocent patients.

Now, if only the older dentists were guilty of these practices, there would be no need for alarm, but modern dentists, even recent graduates, are included among the offenders.

Where lies the cause of this condition of affairs? I believe much of the responsibility may be placed upon the teaching of orthodontia, for if even its foundation truths were known, such blunders would not be prevalent.

Many persons are prejudiced by first impressions, and there are few who are not greatly influenced by ideas received at college. They naturally suppose that the school teaches the best that is known in its various departments. If, then, orthodontia is misrepresented by its treatment in dental colleges, we may expect those wrong ideas to be prevalent among those who have been under their influence.

Is orthodontia misrepresented by its present teaching? There is quite a diversity in the plans of treatment of the subject by the various schools. There are but two or three which do not claim to pay some special attention to orthodontia, and the school must be very unprogressive that does not recognize it at this day. It is not lack of consideration, but consideration along wrong lines that is working injury.

The general plan is to try to teach almost all that has been done or attempted and all the theories at present advocated. Along with this there is the technical work of making all kinds of appliances, ancient and modern, simple and complicated. For proof of these statements one has but to look at the text-book most generally approved for this study, or read the references to this department in college announcements. In other departments of dentistry the best is selected and taught

**Faulty  
Teaching.**



thoroughly, and why should it not be so with orthodontia? The student is presented with a chaotic mass of information and conjecture, and it is no wonder that he often becomes disgusted and prejudiced, or bewildered and misled. He receives wrong impressions in the beginning, and orthodontia is to him a complicated study of invention and experiment. In attempting too much, little is accomplished but confusion. Many things are interesting and valuable as general dental information, or in a special study of the subject, but it is not practicable to teach them to students preparing for the general practice. They certainly have enough to learn that is actually necessary, without being burdened with anything further. Important facts and basic principles are crowded out of mind by the excess of details.

Orthodontia is properly a specialty and to be thoroughly mastered must be studied as such by those specially interested in it and adapted for it. What the dental student needs is a thorough familiarity with the principles that will enable him to detect and diagnose cases which come under his observation; also an understanding of some system for correction and a working knowledge of the necessary appliances.

Some will say that principles are taught, and thoroughly, too. Well, the physiology and dynamics of tooth movement and the etiology of irregularities usually comprise the principles taught, and one may be quite familiar with the teaching along these lines and yet be unable to intelligently diagnose a case of malocclusion or know the changes necessary for its correction. He may be able to accomplish the tooth movement to him apparently necessary, and yet make a serious blunder and failure because, in his planning, there was no consideration given to the requirements of occlusion. In teaching principles, little, and often nothing, is said of occlusion, yet without it there can be no proper conception of orthodontia.

One of the greatest hindrances to a popular understanding of orthodontia has been the lack of system and practically all of the system and logical classification at present is the result of a careful study of occlusion. I believe that the Angle classification of malocclusion is a great step in simplifying the subject, and it is to be hoped that it may soon become more generally known. Without such a basis for reasoning, diagnosis is largely guesswork and consequently faulty.

A potent factor in the misrepresentation of orthodontia is the course of technics generally used in its teaching, and the whole curriculum of dental study contains nothing that is more of a failure. This course has developed almost too rapidly, probably as a result of the recent agitation of the advantages of technical work in general, and the desire for an extensive course seems to have been so great as to overshadow the neces-

sity for a useful one. The mechanical is excessively magnified to the detriment of all else, while the importance placed upon appliance-making is serving to perpetuate that primitive type of orthodontist who relies upon his natural mechanical ability rather than upon scientific research and broad thinking.

**The Making  
of  
Appliances.**

Why is it not time that appliance-making for orthodontia should be relegated to the artisan, as has been the making of instruments for other branches of dentistry? The making of the "principal appliances" is no more a part of orthodontia than is instrument-making a part of operative dentistry, and yet students are required to make all kinds of contrivances from the raw material. Most dental schools are proud of the detail in their course in technics and are pleased to make such announcements as the following: "Our students are required to make all kinds of simple appliances and at least one complicated appliance;" "each student makes the chief appliances of six different authors on orthodontia;" "the student in this department is familiarized with the construction of the various forms of appliances used in the correction of irregularities of the teeth and jaws by being taught in the technic laboratory to make each part of every appliance commonly used."

Others who do not make such plain announcements have even worse ordeals in store for the unfortunate student. Long lists of requirements are arranged, providing for the making of taps, nuts, bolts, bands, and a great variety of combinations, and all from crude material and by hand work. The following is a list of requirements in one school and shows the character of the usual course in orthodontia technic:

"Students in the Freshman year do not receive any instruction in orthodontia. In the Junior year they receive from eight to ten Demonstrative Orthodontia Technic Lectures, and are required to construct and deposit the following: Six decimeters of No. 30 wire, drawn from No. 15; two Magill bands 3 mm. wide, one with hook and one with wire loop; six cm. of No. 23 wire, three cm. of which is threaded and three plain; one tube drawn over No. 22 wire, three cm. long and soldered; Magill band with tube, length of tube being equal to the mesio-distal diameter of the crown of the tooth banded; one square headed screw one cm. long, head two mm. long and one and seventy-five hundredths mm. square; two square nuts, same dimensions as head of screw; one round headed screw one cm. long, head two mm. long, one and twenty-five hundredths mm. in diameter, with a hole through head for turning; two octagonal nuts two mm. long and one and seventy-five hundredths mm. in diameter; small wrench one dm. long to grasp square headed screws or nuts; one

jackscrew three cm. long, and one traction screw four cm. long; two adjustable Magill bands, one for molar and one for bicuspid; one small key about four cm. long, with tapering shank to fit square headed screw. All of these pieces, except the wrench, which is of steel, are made of German silver, highly polished before being deposited. Also one copy of a practical piece, consisting of a retraction arch passed through tubes on molars mounted on neatly trimmed, well paraffined model.

"In the Senior year they receive fifteen lectures devoted exclusively to the theory and practice of orthodontia, also five Demonstrative Orthodontia Technic Lectures, and are required to construct and deposit the following: One traction screw, mounted on natural teeth imbedded in plaster of paris, extending from molar to cuspid to cause partial rotation and retraction of cuspid; one jackscrew from bicuspids at one side to lateral incisor of opposite side, producing forward movement of the lateral. This appliance is also mounted on natural teeth imbedded in plaster of paris; also copy of a complicated device mounted on a neatly trimmed, well paraffined model.

"Under the personal supervision of the instructor in orthodontia, the Senior class conducts several practical orthodontia cases in the infirmary, the appliances constructed and mounted by members of the Senior class."

Is it any wonder that orthodontia should be considered irksome? Is it strange that it is supposed to require an unprofitable expenditure of time and patience? Such work is in no way agreeable to the students' idea of dentistry, and rightly should not be. Few men have the ability to invent and construct appliances as needed in practice, and if they had, few could spare the time to do it when the market offers much better ones ready made. Good and useful appliances are often put in disrepute by the use of poor imitations of them.

Present methods of teaching do not justly represent orthodontia, for they so frequently cause an aversion to its study when it should be most fascinating, even to its difficult problems. There is ample evidence that the present course is giving to the student of dentistry little that is of real value in practice, and it would seem advisable to teach less, and to teach more thoroughly that which is important and really necessary.

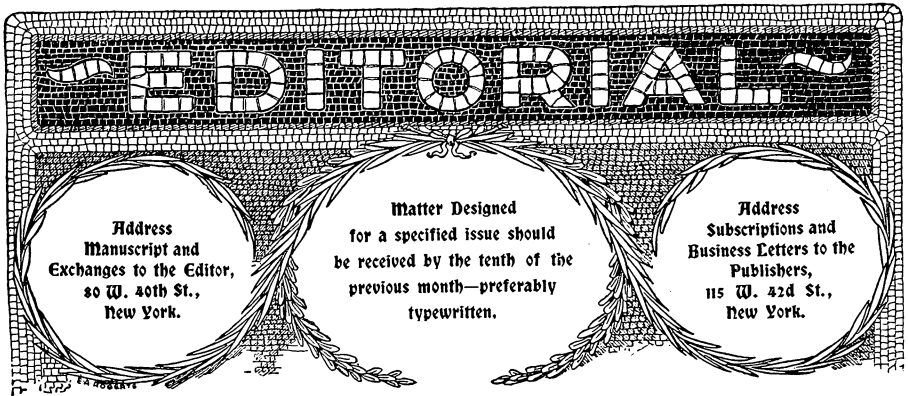
Occlusion, being the very foundation, should be given the first consideration, and that over its whole scope. With a knowledge of its principles and a thorough appreciation of their far-reaching possibilities, there is less need for consideration of problems otherwise difficult of solution. For instance, the problems of extraction will no longer require a special set of rules, for it will be practiced only as a last resort. The development of the teeth and jaws, the causes of malocclusion, and the physiological changes during and subsequent to tooth movement should, of course, receive due attention.

The best plan of treatment for various conditions should be selected and classified to form a guide for corrective procedure. The unnecessary construction of appliances must in the near future be abandoned and, at present, most of the requirements in that line should be dispensed with, especially those that can be made by the mechanic to advantage. A working knowledge, rather than a constructive knowledge, of appliances is necessary and can be afforded in abundance by clinic cases.

The making of models from plaster impressions should be a part of the course in technics, as they are the nearest approach to accuracy, and any but accurate models are of little value and often positively harmful, for they are untruthful.

It is of the very first importance that students of dentistry should be given such instruction as will form a basis for intelligent diagnosis and prognosis. They should have that if nothing more.





## The Illinois Scandal.

Two years ago, just prior to the meeting of the several National Associations at Niagara Falls, we published specific charges of collusion between the Illinois Board of Dental Examiners, and certain irregular dental schools, whereby the alleged graduates of the latter were admitted to practice and granted licenses. In addition to the published matter, our editor personally appeared before the National Association of Dental Examiners and delivered to that body a mass of evidence in the shape of letters, affidavits, etc., urging an investigation. A committee was appointed.

In certain quarters the cry went up that the course pursued by ITEMS OF INTEREST was not in the best interest of the dental profession; that charges of this character could only operate to injure the name of American dentistry, and the status of American dental diplomas abroad; in short, that no benefit could accrue, whereas by "fouling our own nest," much harm might follow.

During the two years that have passed little, if anything, has been done by either of the three National bodies, nor by the societies of the state of Illinois, to abate the evil. In Germany, however, our published charges had an immediate effect. The Government took cognizance of the state of affairs disclosed, and its agents in this

country were asked to investigate. The consular reports to the German Government satisfied the foreigners that the charges made by us were correct. Thus the trouble assumed international significance. The American Consul in Germany, Mr. Worman, became an active factor, and by his good work there is at last hope that the evil will be abated if not eradicated.

Perhaps some do not fully comprehend the nature of the evil as it has existed. In this country the dental diploma usually carries with it the degree D.D.S. In England and in English colonies the dental degree is L.D.S. (Licentiate in Dental Surgery). In the United States the license to practice bestows no title, but is merely a certificate, testifying that the holder has passed the examinations legally required in the state where it was granted. Unscrupulous men, however, returning to Germany, have used our State license as a basis for adopting the title L.D.S. Thus certain schools in Illinois have widely advertised throughout Germany that they could promise the state license to their graduate, who thus would have two titles, D.D.S. and L.D.S.

In our August issue of this year we warned the National Associations, about to convene, that their lassitude in regard to the charges which we had printed had not been imitated by the German authorities, and that action might be expected. This prophecy has been more than fulfilled.

In accounts thus far published, recording the occurrences at Milwaukee, little credit has been given to the Examiners' Association, possibly because they did not contribute money, which indeed they could not do in the present state of their treasury. But they were the first to invite Consul Worman to address them, and they passed the following resolution:

*Whereas*; It has been brought to the attention of this association through the August number of *ITEMS OF INTEREST*, and the report on President's address and the evidences presented by Mr. J. H. Worman, the American Consul at Munich, Germany, and also through a communication from the National Association of Dental Faculties, with evidence attested by the names of the foreign relations committee of such association, that certain colleges in the State of Illinois have been issuing illegal diplomas and circulating by means of circulars and other methods, information which is misleading, and in the essential untrue, and

*Whereas;* The American State Boards of Examination have thus been brought into disrepute in foreign countries, especially in Germany, and such actions have there led to the publication of a government decree depriving those holding American degrees from practicing in that country, except upon conditions scarcely obtainable, therefore, be it

*Resolved;* That the National Association of Dental Examiners, in session at Milwaukee, does hereby place itself on record as denouncing and condemning in the most emphatic language this deplorable state of affairs, and places itself on record as opposed to such impeachment and unworthy official acts, and also pledges itself to use every honorable means to aid in bringing to strict accountability such college or examining boards; and be it further

*Resolved;* That, inasmuch as the evidence now in the possession of the United States government at Washington, D. C., and of the United States consul at Munich, a copy of which evidence was duly transmitted to the Governor of the State of Illinois, goes to show that a former Secretary of the Board of Dental Examiners of the State of Illinois, together with other officials of that body, has issued certifications and given licenses unwarranted by law, among others a certification as to the reputability of a certain institution, which, according to the minutes of the State Board of Dental Examiners, have never been accorded to that institution, we respectfully request investigation not only of the acts of the former secretary of the said board, but also as to the acts of this institution in issuing diploma. And be it further

*Resolved;* That this Association hereby earnestly calls upon the dental profession of the State of Illinois to take such action as may result in the correction of these abuses.

CHAS. A. MEEKER,  
W. H. CARSON,  
J. ALLEN OSMUN,  
MELVILLE A. MASON,  
Committee.

Subsequently the National Association appointed a committee to act for it, consisting of Dr. H. J. Burkhart, Dr. C. N. Johnson and Dr. A. R. Melendy; one thousand dollars was appropriated. The National Association of Dental Faculties, the body which by right should be most interested in establishing the good repute of American diplomas, appropriated twelve hundred dollars, but we are informed by high authority that since the meeting the treasurer has been instructed not to levy the assessment. It is to be hoped that this embargo against the wish of the association, if it exists, will be speedily removed: though it cannot be denied that it would look better were the Illinois State Society to hold a special meeting and

take the conduct of this house cleaning into its own hands and at its own expense.

In our department of correspondence will be found a communication from Dr. Bently, of Chicago, in which is given the details of recent occurrences. We regret to learn that though the Illinois Board has been regenerated, the causes of the whole scandalous proceeding, the irregular colleges, are likely to escape punishment, so cleverly have they covered up their wrong doing.

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### **Change of Address.**

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Correspondents will please note the fact that communications to the editor should hereafter be addressed 80 West 40th Street, instead of 115 Madison Avenue, as heretofore.

It may not be inopportune to notify secretaries of societies and others desiring matter to be printed in a special issue, that copy should reach us by the 10th of the previous month, as stated in the caption of the editor's department.

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### **Crowded Out.**

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In order to present in one issue the proceedings of the American Society of Orthodontists, it has been necessary to omit from this number many important articles, including the next in the series by Dr. Hart J. Goslee.





# CORRESPONDENCE

## The Illinois State Board Scandal.

*Editor* ITEMS OF INTEREST:

Dear Sir:—A drama has been placed before the Chicago public and the *dramatis personae* are all dentists, with the exception of a Governor, a judge, a lawyer or two, and one American consul, who has come all the way from Germany to place the play and take his place as leading man in what looks to be an international comedy.

This is the story, and to get it straight we must begin at the European end of it:

It seems that German cities have been infested for some time with dentists who held what are declared to be bogus diplomas from American colleges.

It is said that inducements were offered to German men to come to Chicago, where, for a consideration, they could obtain these diplomas after a few weeks' residence.

The matter was brought by the German authorities to the notice of the United States Consul James H. Worman, stationed at Munich, Bavaria, who immediately put himself in communication with Governor Tanner concerning the matter. Governor Tanner invited him to come on and personally investigate. This Consul Worman was unable to do at that time, but he gathered all testimony possible, photographs of licenses and diplomas, etc.

Then followed the arrest and trial of one Gumpoldt, in Munich. The testimony taken in this trial showed that Gumpoldt arrived in Chicago in the spring of 1900, obtained a diploma and the degree of doctor of dental surgery from a Chicago Dental School, was admitted and apparently passed the Illinois State Board of Dental Examiners, received a license to practice in the State of Illinois and returned to Germany. He had only been absent from Munich a little over four weeks. Nor had he pursued previously any dental studies. This trial produced a storm of indignation against all American dentists residing in Bavaria. After Gumpoldt's trial and the confiscation of his license, Consul Worman put himself in communication with the Illinois dental board, but could get no satisfactory explanation as to the reason for the Gum-

poldt license. At the same time he was in correspondence with Secretary of State Hay. The outcome of it all is that he came to America to unearth what he claims to be fraud. This is act first.

Act second opens at Milwaukee, where, in August, the National Dental Association held its annual meeting. At this convention, Consul Worman laid the whole matter before the dentists in session, and openly accused the Board of Dental Examiners of the State of Illinois with fraud and the illegal issuing of licenses. The sensation caused by such an accusation can be better imagined than described, and the dramatic climax was reached when Consul Worman openly accused Dr. J. H. Smyser, secretary of the examining board, and hinted at the complicity of all the other members, with the exception of one, whose record had proved unimpeachable. This exception was Dr. James G. Reid, and when his name was pronounced it was greeted with hearty, enthusiastic cheers.

Events crowded quickly after this denouncement. Consul Worman was joined in his efforts by Dr. J. N. Crouse.

These two gentlemen, together with Dr. G. V. Black, Dean of the Northwestern University Dental School, proceeded immediately to Springfield and laid the entire matter before Governor Yates. The Governor asked for the resignation of the entire board of examiners, which request had all the appearances of being the result of the visit of these three gentlemen.

Then followed the arrest of Dr. J. H. Smyser, secretary of the Illinois State Board of Dental Examiners, and a member of the ousted board. Dr. Smyser was arrested on two warrants, charging him with forgery and with issuing bogus licenses.

This action was taken by Assistant State's Attorney Blair, after a consultation between the State's attorney, Consul Worman, Dr. J. N. Crouse and Attorney John J. Knickerbocker. The evidences which were held against Dr. Smyser were the Gumpoldt licenses, photographs of which Consul Worman had brought from Europe, and which Worman declared forgeries.

Shortly after this arrest, Dr. Smyser was arrested on two other charges, malfeasance in office and bribery, and was admitted to bail in \$3,500. The charge of forgery was *nolle prossed*, the experts in handwriting having proved that the writing on the licenses was not that of Dr. Smyser. He was heard on the other two charges on the 6th and 7th of September, and on Monday following, the 9th, Judge Kavanagh held him to the Grand Jury on the two charges mentioned above. The charge of bribery was made by Oscar C. Igney, who, in his affidavit alleges that he paid Dr. Smyser \$400 for his license, which was granted

as coming from the American College of Dental Surgery, which he never attended nor even saw.

It is generally expected that these events, startling as they seem, are only the beginning of an affair which may reach far back into the past and draw within its workings several who have hitherto passed unnoticed and unscathed. It is a very widespread impression that conditions revealed while Dr. Smyser was in office, were but repetitions of what had been going on for many years under other administrations, and that Dr. Smyser only differs from others by being caught.

Here is a case known personally to the writer: A. G. Weisz, a German, hardly speaking the English language, came to Chicago and irregularly attended for three months, the Chicago College of Dental Surgery. At the end of the fourth month he received a license from the State Board of Examiners which specified that he was a licensed dentist, having passed the examination. At the same time in the annual report which the board is compelled to present to the Governor, A. G. Weisz appears as a graduate dentist accredited to the Chicago College of Dental Surgery.

Thirty-five cases similar to the Weisz affair have been unearthed by those working upon this matter, and these happened *before* as well as *during* Dr. Smyser's term of office.

All reputable dentists in Chicago, and, indeed, throughout the State are heartily glad that many crooked methods, hitherto strongly suspected, now stand a chance of being brought to light and abolished. All are giving moral support to the investigation. Many are helping in a more practical way, and evidences and written testimonies are pouring into the offices of those who are heading this crusade.

The new board of dental examiners, appointed on the 15th of August, consists of T. W. Prichett, White Hall, president; J. G. Reid, Chicago (from the old board), secretary; Don M. Gallie, Chicago; Clark R. Rowley, Chicago and G. E. Dameron, Arcola.

The dental profession in the State of Illinois has every confidence in these members of the new board and a lively faith in their disposition to do right.

C. E. BENTLEY, D. D. S.

Chicago, Ill.



### **Southern Branch, National Dental Association.**

At the last meeting of the Southern Branch of the National Dental Association held in July at Nashville, Tenn., it was considered advisable to appoint the time of the next meeting on some date in February, as the former meetings at St. Augustine in 1899 and New Orleans in 1900 had been held. In doing this, it was feared by some that the association might be crippled in regard to the reception of new members, as members can only be received as delegates from regularly organized state and local societies and there will be no meetings in the Southern States between now and the time of the Atlanta meeting in February, from which delegates might be sent. However, if the Presidents and Secretaries of the state societies will take a little interest in the matter, the obstacles can largely be overcome.

All the delegates elected at the last meetings of the state societies who did not present their credentials at Nashville will still be entitled to present them at Atlanta Feb. 18th next and get full benefit thereof, as the year for which these credentials were issued will not have expired at that time. The holders of these certificates may not be aware of the fact that they are entitled to this benefit and should, therefore, be at once notified by the proper officers of their associations.

The attention of all the state and local societies holding regular meetings before February is respectfully called to the matter of electing delegates for the next meeting of the Southern Branch. Each Society is entitled to *one* delegate for every *six* of its regular membership.

The officers and members of the Southern Branch sincerely hope that all parties to whom this communication is addressed will keep the matter in mind and thus assist in making the Atlanta meeting the most successful yet held. Very sincerely,

H. HERBERT JOHNSON, Pres.

Macon, Ga.

**C. D. A.**  
**Twenty-second Year.**

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The fall meeting of the Central Dental Association of Northern New Jersey will be held at 943 Broad St., Newark, N. J., Davis's Parlors, on Saturday evening, Oct. 19th, at 8.15 p. m. Members and friends of the C. D. A. will notice the change of day, this being done to accommodate our many friends from distant cities so as not to interfere with business the following day.

The Executive Committee announces with pleasure the presence of Wolfram E. Dreyfus, B. A., Ph.D., of Columbia College, New York, who will read a paper entitled, "On the Relation of the Chemical Constitution to the Physiological Action of Some Modern Remedies."

Other papers during the season will be read by well known practitioners.

As usual with the C. D. A., every meeting will be preceded by a banquet, which will be served at 6.15 p. m., precisely, and to which every reputable dentist is invited, and whose name will be placed on the mailing list and a menu programme mailed to his office by previous request to the secretary, Dr. F. W. Stevens, 588 Broad St., Newark, N. J. Notice of intention to be present at this banquet must be received by the undersigned by 12 m. of Oct. 17th. This is necessary both to members and guests on account of contract with the caterer.

Trains to and from New York run at short intervals up to 12.30; with Philadelphia, hourly.

CHAS. A. MEEKER, D.D.S.

29 Fulton St., Newark, N. J.

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**Maryland State Board of Dental Examiners.**

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The Maryland State Board of Dental Examiners will hold examinations for certificates to practice dentistry on the 1st and 2d of November, 1901, at the Maryland University, Dental Department, corner Green and Lombard streets, Baltimore, Md., beginning at 9 a. m.

Application blanks and all information will be furnished by the undersigned.

F. F. DREW, Sec'y.

701 N. Howard St., Baltimore, Md.

### **Illinois State Board of Dental Examiners.**

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The next regular meeting of the Illinois State Board of Dental Examiners, to examine applicants for a license to practice dentistry in the State of Illinois, will be held in Chicago on the 17th, 18th and 19th of October, 1901, at the Northwestern University Dental School, corner of Franklin and Madison streets.

Candidates must come provided with the necessary instruments, rubber dam and gold, to perform practical operations and such other work as is deemed advisable by the board.

Those desiring to take the examination should matriculate with the secretary ten days before the meeting. The examination fee is ten dollars.

J. G. REID, Sec'y.

126 State street, Chicago, Ill.

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### **Southern California Dental Association.**

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The fourth annual meeting of the Southern California Dental Association will be held in Los Angeles, on Oct. 8th and 9th, 1901.

L. E. FORD, Sec'y.

Los Angeles, Cal.

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### **Northeastern Dental Association.**

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The seventh annual meeting of the Northeastern Dental Association is to convene in Springfield, Mass., Oct. 30th, 31st and Nov. 1st.

The committee promises eight original essays from men of more than local reputation; forty clinics, table and chair.

The Memorial Building, where the meeting is to be held, has three floors; the upper for meeting, middle for exhibitors, lower for clinics.

One and one-third fares, certificate plan, on the railroads.

Springfield is well located as a railroad center, with eight first class hotels.

All ethical dentists are invited.

EDGAR O. KINSMAN, Sec'y.

Cambridge, Mass.

## Institute of Dental Pedagogics.

The ninth annual meeting of the Institute of Dental Pedagogics will convene on Tuesday, the 31st of December, 1901, and continue for three days at the hotel, Seventh Avenue, Pittsburg, Pa.

The usual New Year Day rates can generally be obtained.

This is the only Normal School existing in the dental profession.

Come everybody and see it perform.

A partial programme is submitted.

President's Address.....By G. E. Hunt, Indianapolis.

Conduct of the Operatory Clinic.....By G. V. Black, Chicago.

(A method of keeping records, grades, etc.).

Executive Work of the Faculty..Drs. Kirk, Patterson, Stubblefield, Hart.  
(Symposium).

Metallurgy, How to Teach.....By Dr. Hodgen, San Francisco.

Class Room Methods of Teaching..By Drs. Hoff, Nones, Tenney, Foster.  
(Symposium).

Teaching Prosthetic Dentistry.....By G. H. Wilson, Cleveland.

Bacteriology, How to Teach.....By W. R. Blue, Louisville.

Report of Committees on Operative and Prosthetic Technics,

By Drs. Weeks and Hoff.

D. M. CATTELL, Chairman Examining Board.

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## New Jersey State Dental Society.

At the annual meeting of the New Jersey State Dental Society, held at Asbury Park, July 17th, 18th and 19th, the following officers were elected for the ensuing year:

President, Wm. L. Fish, Newark; Vice-President, Frank L. Hindle, New Brunswick; Secretary, Charles A. Meeker, Newark; Treasurer, Henry A. Hull, New Brunswick.

Executive Committee: Frank L. Hindle, New Brunswick; H. S. Sutphen, Newark; A. Irwin, Camden; W. W. Hawke, Flemington; Oscar Adelberg, Elizabeth.

Membership Committee: J. A. Duffield, Camden; G. M. Holden, Hackettstown; W. H. Pruden, Paterson; T. Star Dunning, Paterson; H. P. Marshall, Newark.

C. A. MEEKER, Sec'y.

29 Fulton St., Newark, N. J.

## Union Meeting of the Sixth, Seventh and Eighth District Dental Societies, State of New York.

The thirty-third union meeting of the above societies will be held in the assembly room of the Osburn House, Rochester, N. Y., Tuesday, Wednesday and Thursday, Oct. 29th, 30th and 31st, 1901.

### *Preliminary Announcement.*

1. Will Nitrous Oxide and Oxygen Supplant Ether and Chloroform in General Surgery and Nitrous Oxide Alone in Dental Surgery. Dr. W. J. Roe, Philadelphia.

2. The Enamel of the Central Incisors. Dr. Sylvester Moyer, Galt, Ontario, Canada.

3. Some Embarrassing Educational Problems. Dr. W. C. Barrett, Buffalo.

4. Amalgam, the Place It Has Won in Dentistry. Dr. F. A. Balachey, Buffalo.

5. The Gingival Border From a Scientific Standpoint. Dr. S. B. Palmer, Syracuse.

6. The Ethical Relation of Dentist to Patient. Dr. A. C. McAlpine, Warren, Pa.

7. Some New Lights on the Etiology of Pyorrhoea Alveolaris. Dr. J. B. Ernsmere, Buffalo.

8. Subject to be announced. Dr. R. H. Hofheinz, Rochester.

9. Surface Markings Upon the Teeth. Dr. J. J. Madden, Buffalo.

10. Subject to be announced. Dr. J. N. Crouse, Chicago, Ill.

11. Cocaine in Pulp Extirpation. Dr. B. S. Hert, Rochester.

12. Diagnosis and Treatment of Malocclusion. Illustrated with models and appliances. Dr. H. A. Pullen, Buffalo.

13. Utilization of Artificial Light. Mr. E. L. Elliott, Newark, O.

14. Subject to be announced. Mr. W. A. Purrington, New York.

The committee have under arrangement other important additions. There will be a great many clinics, together with a complete dental exhibit. The committee are making strenuous efforts to make this one of the best union meetings ever held by the societies and well worthy of your attendance. Members of the profession are cordially invited.

DR. F. MESSERSCHMITT, Chairman.

138 Main St., E., Rochester, N. Y.